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# A QUESTION OF LANGUAGE DISORDER.

Studies of Assessment, Management and Parent Attitude.

## THESIS FOR PRESENTATION OF MASTER OF PHILOSOPHY 1990

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## ABSTRACT

### A QUESTION OF LANGUAGE DISORDER: STUDIES OF MANAGEMENT

Children labelled "language disordered" failed to make academic progress in schools promoting investigations into the nature of their problems, attendant attitudes and contextual influences.

Studies find differences in haptic, auditory and visual processing between normal and language disordered children. Individual management does not acknowledge this range of modality input problems and selectively targets language form for systematic development. The approach does not result in better school attainments. Perhaps the label "language disorder" limits perception of the extent of difficulties in other areas. In contrast, an interactive method is described, taking account of "inside" and "outside" the child factors. Educational success is produced by inter-relating the language system with the learning context.

Full implementation of the interactive model seems unlikely given the present styles of professional training and existing institutional constraints. However, consumer dissatisfaction with current language learning provision suggests this procedure offers a promising alternative.

Rosemary JW Sage. Teacher-therapist. February 1990

## CHAPTER 1: AN INTRODUCTION TO RESEARCH STUDIES ON LANGUAGE DISORDER:

### LANGUAGE OVERVIEW/REVIEW

#### OVERVIEW

This research is about children who experience difficulty in acquiring and using spoken and written language (oracy and literacy). Their management has not resulted in adequate learning function so providing impetus for study.

There are no national surveys of the prevalence of language difficulties. The Quirk Report quotes a series of estimates ranging from 1.7%-37.4% conducted on a variety of bases and covering different populations. Enderby and Philipp (1986, 1989) produce studies from the literature to suggest a higher incidence in Britain than suggested by Quirk (2.5 as against 0.3 million). Ingalls (1978) in his work on retardation states that deficit in language "is the single most important characteristic that distinguishes the retarded from the non-retarded". The Warnock Report (1978) estimates 1 in 5 children require learning support at some time during their school careers because of retardation. Learning from words is the way children are educated in our culture. Formal school consists of a series of "verbal encounters" (Cook-Gumperz, 1985). Thus, circumstantial evidence points to the fact that we are talking about a major learning problem experienced by a large number of children.

This report, therefore, aims at encouraging reflection on current policy and practice arrangements for those experiencing difficulties with language learning. The debate is set in the context of the prominence which oracy and literacy has achieved on educational agendas over the past decade. In

Britain this is reflected in unprecedented activity at the level of policy making (Frater, 1987) putting, for the first time, oracy alongside literacy in a new national curriculum assessment programme (1989). Similar developments have been taking place in other countries in the curriculum guidelines produced by various states in Australia and provinces in Canada (MacLure, 1987).

These changes are rooted in a new emphasis on the centrality of language for acquiring knowledge and understanding. Official reports (eg. Bullock, 1975) have urged teachers to scrutinize language across the curriculum and plan deliberately to extend the range of opportunities available to pupils. George Sampson's statement (1934) that "every teacher is a teacher of English" has acquired a resonance he could not have predicted.

Wilkinson (1965) asserted that "oracy is a condition of learning in all subjects". This heralded a growing interest in speaking and listening related to developments within the study of child language acquisition, linguistics and education. Child language investigators (Halliday, 1975; Tough, 1977; Wells, 1981) began to look not only at mastery of the formal systems of phonology, grammar and semantics but also at developing communicative skills: at the ability to use talk for a range of communicative purposes and hold relevant, coherent conversations with others. This growing emphasis on child use of language was in parallel with developments in linguistic theory, where there has been a move away from formal structure (as promoted by Chomsky, 1957) to study utterances in actually occurring situations for genuine purposes (Labov, 1972; Labov & Fanshel, 1977; Searle, 1969; Sinclair & Coulthard, 1975). Hymes (1972) developed

the notion of "communicative competence" to capture the idea that speakers not only have to master the rules for combining words into meaningful sentences, but must also be able to use language appropriately, in a wide range of situations, with people of differing age, status etc. for a large number of purposes. Within education, the move towards more informal and exploratory methods of teaching, mainly in the primary school, has brought spoken language in the classroom into greater prominence. The traditional teacher directed "chalk and talk" method of teaching limits pupils' opportunity to participate in classroom discourse (Flanders, 1970; Edwards, 1978).

Almost all "official" talk is channelled to or by the teacher who does most of the speaking, decides who else converses and evaluates what pupils are required or permitted to say (Friedrich, 1982). This kind of class interaction is linked to school organisation, the teacher's role and style of teaching.

In many schools (particularly secondary) pupils are taught as large classes, with members working as individuals within the group (rather than in pairs which would promote spoken language, Bennett 1987). Teachers are likely to have thirty or more potential speakers to manage, often within a central communication system in which whoever is speaking is supposed to be heard by all. In order to prevent the class breaking up into smaller groups (because the management of turns becomes complicated in a large group and there is frustration at having to wait one's turn) the teacher has to manage and control the turns taken by speakers. Talk between pupils is often not tolerated and the teacher may also be aware that failure "to keep the noise down" may be interpreted, both by pupils and colleagues, as a

lack of professional competence (Edwards & Westgate, 1987)

This type of school organisation has encouraged programmed, passive learning associated with TRANSMISSION teaching (Barnes, 1976) which does not foster development of pupils' spoken language. The transmission teacher has a high level of control over pupil learning and is mainly concerned with the PRODUCT of teaching, assessing work in relation to his own goals. Pupils are the receivers of knowledge and there are heavy constraints on what they can say and mean because it has to be confined within the limits of what the teacher treats as being relevant and correct (Young, 1984). Analysis of classroom discourse in traditional whole class teaching shows that teachers ask a very large number of questions, which elicit factual and brief answers rather than any extended display of reasoning (Hunter, 1972; Hargie, 1978). The school examination system also encourages teachers to focus on the product of their teaching and transmit information to pupils.

Newer didactic styles, involving INTERPRETATION teaching (Barnes, 1976) and PROCESS learning, have placed greater emphasis on pupils' active participation in the language of the classroom, by incorporating group discussions and collaborative work. The interpretation teacher sets the framework for a task, but the pupil decides on his own goals and explores to the depth that s/he is able to. Here, the pupil rather than the teacher, is in control and plays a much more active role in learning. The pupils' ability to reinterpret knowledge is crucial to learning and depends on a productive dialogue between student, teacher and others. Process learning is seen by many to be crucial in facilitating the expressive role and



reflective obligations of the language process (interactive organisation) (Sage,1989). Barnes (1976) has argued that the opportunity to explore topics and concepts in small groups can elicit a higher order level of hypothesising and critical reasoning than pupils display in more structured teacher to class lessons. Writing also can emphasise the product to process mode and gives the teacher a useful permanent record. Whilst both product and process approaches to learning are elements of good teaching, ten national surveys of language performance (APU language monitoring 1979-83) have suggested that children experience more programme than process approaches to learning.

The importance of spoken language was officially recognised in the report of the Bullock Committee, Language for Life(1975). which emphasised the centrality of oral language as a communicative medium in society and recommended that a primary aim of English teaching should be to help develop spoken skills in preparation for the demands of life.

Although the importance of spoken language has been recognised in government reports and in the process learning in primary schools, oral skills have been undervalued in the teaching of English in secondary establishments. with a decline in both activity and response in oracy in the fourth and fifth year once examination courses have begun(Frater,1988). However, the new General Certificate of Secondary Education (GCSE) has attempted to move teaching methods towards a process learning approach, by allowing pupils more scope in controlling their learning. It gives parity to spoken and written forms across the subject range and includes a separate oral component in English requiring pupils to perform skills of arguing, persuading, explaining, collaborating, responding to others and



leading discussions without domination. The GCSE gives oracy a place in secondary schools and has meant that teachers have had to alter their teaching styles to allow greater pupil participation. This oracy approach is now followed through the whole curriculum as a result of the Education Reform Acts(1988).

It is now accepted that "language in use" refuses to be carved up into four modes of talking, listening, reading and writing. They are interrelated processes and no mode is intrinsically more important than any other in learning. Official sanction to language as the pivot of learning has been dubbed by Ball(1985) "English as language paradigm" and reinforces the holistic notion of education.

For those involved in language education these are exciting developments, validating the efforts of many who have been working to assert the centrality of talk in learning and energising the search for ways of giving children a spoken "voice" in the classroom. At the same time there is consternation. Much has to be decided and discovered about the nature of language, its problems and development, the relationship between oracy and literacy and the role education might play in the learning process.

Since oracy has not been an examinable component in our education system (now rectified in the Education Reform Acts,1988) teachers are unused to teaching and assessing speaking and listening activities and are asking: "How do we do it?" (Sage,1989). They are exhorted to re-examine their practice to accomodate new and negotiable forms of learning through talk as well as coming to terms with a system requiring them to carry out continuous assessment of oral communication. In undertaking this they are

likely to find themselves acting as unwilling "brokers" between various interest groups. For example, they may have to confront the continuing expectations of a literacy based curriculum from parents, governors and employers. They have to reconcile the vision of a broader education based on the interrelation of speaking, listening, reading and writing across subject areas within a framework leading towards greater centralisation of the curriculum, clear statements of objectives and accountability for definable education products. These assess language as it is used for various functions and purposes across the curriculum reflecting the position stated in the Cox Report (1988) on the teaching of English that form and content are developed from a wide and varied opportunity to use it. Therefore, language teaching is turned on its head because emphasis has been on skills to acquire form and content whereas language use has been left to chance development. A new methodology directed at facilitating language design and function is now indicated in the national curriculum's ten levels of attainment.

This places a new remit on teachers and other professionals involved in language education of the retarded. The Education Reform Act (1988) require all children to be assessed on age related targets at 7, 11, 14 and 16 years unless they have a legal statement allowing disapplication or modification of the curriculum. Figures available in the Mansard Report on children with special needs (13 March, 1989) indicate that only 1.8% of children in educational placements are legally statemented. There are implications for the other 18%+ specified in the Warnock Report (1978) who will need temporary disapplications or modifications of assessment targets in line with particular needs. For example, a deaf child is likely to need some modifications to targets in oral and group discussions. As I write a London

Headteacher has been appealing on Radio Mercury for the help of speech therapists in planning the curriculum for children with communication difficulties. The programme pointed out that these professionals were a medical based profession working in the health service using differential diagnostic procedures not always appropriate for child learning needs. The College of Speech Therapists has appointed an education working party to look into policy and practice issues within the national curriculum but guidelines have not yet been published. Central School of Speech and Drama(London) with undergraduate teacher and speech therapy courses has already anticipated a need for closer professional collaboration by setting up joint training initiatives and a National Oracy Project Teacher/Therapy Link Group to promote cooperative methodologies(October,1989).

Educational reforms emphasise a core curriculum for all and put speaking and listening alongside reading and writing as the important modes for learning in all subjects. This emphasis on language brings into focus the role of speech therapists for those experiencing learning difficulty. As a medically trained profession they are not well attuned to curriculum demands. Thus, a need for change is established and this will be clarified in a review of policy and practice for those with specific speech and language handicaps.

RECOGNITION AND PROVISION OF SERVICES FOR PEOPLE WITH LANGUAGE  
DIFFICULTIES

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People with problems in communication have long been recognised. As early as the 8th Century B.C. Isaiah proclaimed as some of the blessings of a glorious kingdom: "The \* tongues of stammerers shall speak plainly. The tongue of the dumb shall sing."

Concern is naturally aroused by any aberration of endowment that sets individuals apart, reduces capacity to develop according to expected patterns, learn to a normal standard, and work on the same level, make wants known, exchange and create ideas, make judgments and express themselves. It was not, however, until this century that society expressed any widespread desire to know more about handicapping conditions and discover ways and means of helping people with such problems to achieve. This marked a change in view from "fatalism" (knowing your place in society) to equal opportunities for all people.

Until this time, people felt fear, revulsion, repudiation and contempt for those set apart from normality in some way. Attitudes have slowly changed, however, and now most people would acknowledge (in theory) that people who have problems should be given the best of opportunities to overcome them and lead as 'normal' a life as is possible.

\*  
Isaiah Chapter 35. (1611)

One of the first to make the study of people with speech and language problems a profession was indeed a colourful character. John Thelwall (1764-1834) launched his career with a flourish. During 1801 he embarked on a successful series of lectures in the North of England that heralded the beginning of the new science of speech pathology. His reputation ensured good attendances. In 1794 he was acquitted of treason at the Old Bailey. Though winning the day, Thelwall had run foul of the establishment and his spell in prison effectively ended his political activities. He sought new pastures, but his gifts and interests were wide ranging and he made several false starts trying his hand as a tailor's apprentice, attorney's clerk, shop assistant, journalist and farmer. Finally he returned to his first love, the English Language - but his primary purpose was no longer to edit journals and harangue crowds with revolutionary ideas. Humanitarian ideals could take a quieter form and Thelwall's passion for the spoken word, his own struggles with a lisp, his medical knowledge and his epileptic brother turned his mind to handicapped members of society - more particularly the speech and language disordered, whose inarticulateness was for him analogous to that of the depressed masses.

The next 100 years saw a number of people becoming interested in speech and language as a result of advancing knowledge from many fields. With the work of men like Bell (1867) and Sweet (1888), the latter part of the 19th century saw considerable advances in the physics of sound and the study of the nature and behaviour of human speech organs. These studies were developed this century by the work of Jones (1956) and other phoneticians, and by linguists such as de Saussure (1949), who examined the nature of language as a whole.

Merging with the interests of phoneticians and linguists was the work of some eminent neurologists. From the 1860's Hughlings Jackson (1926) published a series of writings on the problems of loss of speech. John Wyllies (1894) published his classic text: "The disorders of speech.", which covered



the subject of development of speech in childhood, its disorders, and loss of speech in adult life. The first world war, provided Henry Head (1926) one of the leading neurologists of his time, with the opportunity to study large numbers of patients with head injuries causing impairment or loss of ability to use spoken language. His work inspired Teachers and Nurses to try and assist him in endeavouring to improve the language of brain injured patients. Speech correctionists or Voice Therapists were appointed on a part-time basis to some hospitals. The majority of these early practitioners were teachers of voice production, elocution and singing, as they were the only people with practical experience in a related field. Many of these, realising their lack of scientific background knowledge, began to work closely with Doctors to build up a body of information about speech and language disorders. This early association has left the profession of speech therapy with the unfortunate legacy of being partially identified with elocution in the minds of the public. Other researchers, however, began to come from Universities and Teacher Training Colleges and included teachers of the handicapped, particularly the deaf. These brought with them the theories of educationalists and psychologists, such as Piaget (1952), Montessori (1912) and Fröbel (1826). As treatment of communication problems developed and the range of patients widened to include not only those with functional disorders but the psychiatrically disturbed and mentally handicapped there was considerable influence from educational theory.

The beginnings of management of language problems was, therefore, dependent on stimulus from medicine, while undergoing influence from the insights of phonetics, linguistics, psychology, psychiatry and education.

#### Organised treatment for Language problems

Systematic Therapy for Speech and Language disorders was started in 1906 by Manchester Education Authority, soon to be followed by Glasgow. (Quirk Report 1972). The Therapy consisted of classes for groups of stammerers, which were



staffed by instructors with little or no training. In 1911 St. Bartholomew's Hospital opened a clinic for adults as well as children offering periodic treatment sessions. This was soon followed by a clinic at St. Thomas's Hospital.

The 1920's and 1930's saw important developments in linguistics with the work of Sapir in "Language, an introduction to the study of speech" (1921) and Bloomfield (1935) in The United States of America, and Trubetskoy (1969), Jacobson (1968) and The Prague School in Europe. The fruitful interactions between Linguists and Psychologists resulted in the new field of study of psycholinguistics. During this period there was an influx of refugees to Britain, and among these, a number of qualified Speech Therapists. This opened a debate on the standards of qualification which eventually led, in 1945, to the establishment of the College of Speech Therapists, which was formed to administer the profession and approve independently organised training schools and set examinations for Pt. 1 & 2 of the Licentiate Diplomas. From the 1960's to the 1980's there has been a move to a fully graduate profession, accelerated by the recommendations of the Quirk Report (1972).

Since the establishment of the College of Speech Therapists the tendency has been to interpret the term 'speech' narrowly - to cover merely the utterance of words by the mouth. There is still a preoccupation in lay people's minds with what is heard to come out of the mouth and the way sounds in speech are pronounced. The studies and practice of Speech Therapists, however, are justification for repudiation of a statement made by the Ministry of Health (1951) that "speech therapists teach the correct use of organs of speech in the same way as physiotherapists and occupational therapists teach the correct use of muscles injured or impaired by disease." In practice, the profession is concerned with the breakdown in an individual's verbal capacity, no matter at which level in the whole process of his use of Language the breakdown occurs. To suggest the range of concern, it is pertinent to quote

Fry (1966): "an individual's speech embodies his experiences from his earliest moments as a human being to the few moments before he makes a particular utterance - experience which is of many different kinds made up, as it is, of a life-time of instinctual (receptive and expressing) emotional and intellectual experiences." In addition Meredith (1966) says "the Language of each individual is a sample of his cultural heritage, and every-time he opens his mouth to speak not only is his personal biography reasserting his personal part, but the history of his people and of his neighbours is dominating the forms and the consequences of his utterances". So when a Speech Therapist approaches the language and speech problems of the non-communicating patient, the child with retarded language development, the mentally or physically handicapped, the cerebral palsied, the brain injured, he/she is constrained not only to find out from medical specialists the extent of impairment because of the condition, but also to determine the sensory losses of the patient, any mental disorders in perception, cognition, retention, reception and formulation of language, as well as social factors resulting from conditions such as frustrations, depressions, poor stimulations and emotional instability.

To envisage all the resources, therefore, from which Speech Therapists must draw in meeting such states is to realise how well informed they must be in the facts of learning, and of remedial methods for losses in that field. They also require a sound knowledge of psychology, and must be prepared to interpret, diagnose and offer suggestions for action.

#### Approaches to Management.

Even though the College of Speech Therapists has been in existence for 40+ years, limited progress has been made in getting to grips with the range of problems involved in language disorders. This is partly due to the fact that although speech therapy was recognised as an independent profession and excluded from the professions supplementary to Medicine Bill in 1959, it

poses precariously between education and medicine. Therapists function in The Health Service with a clinical brief to diagnose and treat patients referred to them, but their techniques are educational.

Traditional training for the Diploma of the Colleges of Speech Therapists has had, however, a strong medical bias. Although exacting and detailed it has not always reflected the complexity of the material to be mastered or the academic level at which it must be understood (Quirk Report 1972). The 'medical model' approach to assessment and treatment of language problems has led to a preoccupation in identifying and localising underlying faults. For example, a child's inability to talk is frequently described as Aphasia. The fault may be localised in the motor area of the cortex - in the area of the superior convolution of the left temporal lobe for instance. The search for an explanation of a disorder of speech or perception leads, in the absence of specific evidence of brain damage, to the clinical diagnosis of 'minimal brain damage'. This is pure speculation in situations where it is quite impossible to slice up the grey matter of the cortex and examine it by microscope. Diagnosis, therefore, tends to be drawn away from the psychological processes which may be more amenable to help and lead to the treatment, not of a child with a disorder, but what has been identified as the essential component of the disorder the fault in bodily structure or function. The child is viewed as a patient with a problem needing expert treatment taking place in an isolated context - the clinic treatment room usually for half an hour each week.

One of the significant trends in the past decade, however, is the increasing awareness that the needs of language impaired children cannot be met through programmes of periodic treatment in clinics (Myklebust 1971). The situation is remote from a child's social and educational context and the tasks presented in such sessions may have little in common with those in normalised settings. There may be no grounds for these structured learning sessions and if so they can serve little purpose. Therapists, however, are often reluctant to invade educational fields and view the child's difficulty in the context of

his/her overall problems in a school base. They are not trained teachers with classroom management experience and so are wary of making educational prescription in language areas of reading and writing.

Cooper, Moodley and Reynell (1979) in their research on children with language acquisition difficulties document conclusively the relative ineffectiveness of traditional periodic speech therapy in the amelioration of language difficulty. Their answer was to involve parents to carry out the programme at home, under the direction of a speech therapist.

McConkey (1981) points out that the essential sharing of knowledge and skills which are necessary to involve parents and teachers are not always applicable to busy clinic settings because they are time consuming. Furthermore, he says "they are dependent on the presence of a knowledgeable therapist: one who knows exactly what to do and has the confidence to instruct others. As yet, such Therapists are in short supply". He goes on to point out the dangers of imposing our understanding on parents. "We make the decisions, we show them what they have to do and we ensure they copy us". The result is unthinking, inflexible approaches. Work by Cheseldine (1979) giving parents specific language objectives (.e.g. 2-word sentence), but no advice as to how they should do this proved very successful and showed that parents do not always need instruction in teaching methods. This was extended by McConkey and O'Connor (1981) in providing a framework and rationale, using video programmes, whereby parents could select suitable objectives and teaching approaches to use with their child. The results from this and a similar study by Robson (1979) were encouraging, in making parents and teachers the decision makers, which improved their approach to the child and greatly increased language levels.

Another study at the Maudsley Hospital on Autistic children, by Howlin. (1981) indicates the effectiveness of parents as therapists for their own

children, even in an area as complex as language training. Involving parents in this way ensures individual treatment for each child; it means that therapy can be carried on throughout as much of the child's day as possible, and avoids problems of generalisation from a clinic setting to the home.

Research, therefore, shows that a system which selects children for treatment using predominantly norm-referenced criteria and isolates them in clinic settings, may not yield useful information or provide efficient long term management strategies. More interactive approaches involving parents and teachers in management show promising results. Emphasis is placed on the social context, the tasks faced and the child's response. This helps to broaden the range of observations made, define the circumstances, the context or the system of which the child's problem is a part.

As we have seen, 'the medical model', directs attention to behaviour or physical signs that might throw light on the nature and location of the fault. In the case of speech difficulty this includes neurological signs, clumsiness, cross-laterality, distractibility, over-activity, lability of mood, and in the history to pregnancy and delivery complications, birth weight and abnormal post-natal signs. The child is assessed, but in general, only part of him/her, in order to discover organic or functional abnormalities focusing on "within child" <sup>factors</sup> 'The Inter-active Model' on the other hand, directs attention, not so much to the child by himself, but to the quality of inter-action between him/her and others around. Observations are directed at the kinds of messages exchanged, and the use of verbal and non-verbal responses. Interest is not only with message content - but with his consistency - and the use of inflection, sequence, rhythm and cadence of vocalisations, as well as the use of posture, gesture, handling and facial expression (eg. eye contact).

In general the history and training of Speech Therapists tends to favour the medical view. This, itself, is not wrong, but needs to be balanced by the interactive viewpoint - if a child's learning needs are to be met fully.



The developments which have occurred in language intervention procedures in the past decade demonstrate the fact that theoretical formulation and empirical evidence do have a continuing and desirable impact on practice. The programmes in operation in the 1970s had their origins in behavioural theory and experimental research generated by it, showing that linguistic structures could be taught to populations of retarded children (eg: Derbyshire Language Programme, 1980).

The early behavioural programmes viewed the child as a passive learner who could be taught syntactic structures by means of a stimulus-response-reinforcement method. Training was carried out in a clinical setting by a speech therapist. Failure of the language structures taught to generalise into everyday usage in the child's natural settings led to a serious questioning of this approach. The continued use of clinical settings by therapists with language delayed children is still a problem (McConkey, 1981) although methods have changed and, in some instances, parents are more closely involved in intervention sessions.

Research findings in semantics and pragmatics have recently led to major changes in language programme content. Hart & Risley (1974, 1980) and Hart & Rogers-Warren (1978) accepted the necessity for teaching in natural settings. The Environmental Language Intervention Programme (ELIP) (MacDonald, 1974, 1985)

breaks new ground covering the child's use of language at home and parents' attitudes to problems. The Hanen Early Language Parent Programme (Manolson, 1977) has been effective in increasing conversational skills, in particular turn taking behaviour, by helping parents improve their own interactions with their children. Turn-taking skills have been seen as a prerequisite to language development, a process which the child must learn and the means through which learning is facilitated (Wells, 1980).



Evidence that developmentally delayed children experience difficulty in turn-taking, topic initiating/continuing behaviours and thus fail to receive feedback from mothers in the same manner as normal language learning children do, has been presented by Jones(1980) and Cunningham et al.(1981). Bocher(1987) developed a programme focusing on the effects of different contexts on a child's social function. Schedules devised by Bricker & Carlson(1980); Weistuch & Lewis(1985) and McConkey & Price(1986) pay attention to social and cognitive aspects and aim to raise parent awareness of the process by which language is acquired.

Therefore, the capacity for language intervention programmes to change and grow, in response to experience and developments in research is cause for optimism.

This review suggests that programmes of the future will be less structured rather than more so and incorporated into the natural everyday life of the child using every opportunity for communication rather than setting aside particular times and places for teaching language.

The present state of knowledge needs extending in many important directions and three key issues emerge:

1. The nature of language disorder - the delay/difference debate.
2. The attitude differences of home/school/society which affect interaction between child/parent and others - the cultural conflict debate.
3. The communication styles of oracy(contextual) and literacy(decontextual)

and their implications for the instructional situation - the  
intervention/interaction/integration debate.

## CHAPTER 2: BACKGROUND TO A RESEARCH PROJECT ON LANGUAGE DISORDER

### INTRODUCTION

In 1976/77 I was asked by my Area Speech Therapist to assess a group of language disordered children using the Illinois Test of Psycholinguistic Abilities (ITPA) (Kirk, McCarthy, Kirk, 1968). This test deals with the psychological functions of the individual which operate in communication activities. It analyses three processes, receptive, organising and expressive, at representational and automatic levels and uses auditory, vocal and visual motor channels. There is an attempt to isolate specific skills uncontaminated by other functions. The hypothesis is that by training deficient processes/skills there will be improvement in language functions.

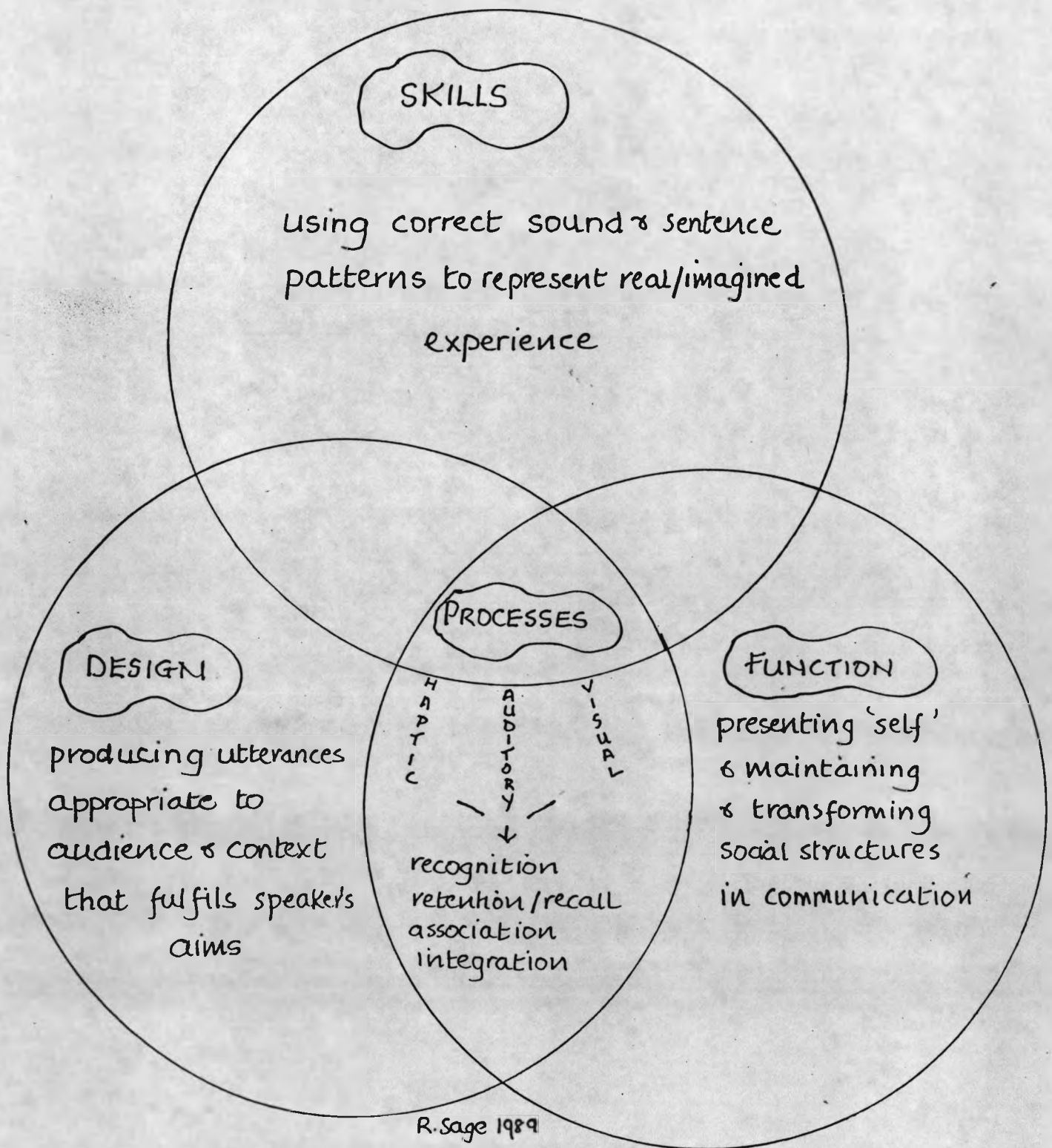
The criteria for referral for ITPA testing was as follows:

- a) General assessments used had not been useful for pinpointing problem areas. (eg. Intelligence tests, phonological/linguistic analyses)
- b) The traditional phonetic and syntactic management approaches were not resulting in any discernible improvements in language for learning and communicating.

150 children, aged 5-16 years were initially seen in a six month pilot scheme. The group were by no means homogeneous. However, they were 2+ years retarded in language performance (compared with chronological age) which was not accounted for either by serious sensory losses or

below average intelligence. The teachers of each child were asked to provide a list of his/her problems as presenting in school. These were collated for common themes and 12 difficulties emerged that to a greater or lesser extent were present in each child's behaviour. These were as follows:

1. Reduced level of attention to tasks. (cognitive process)
2. Reduced ability to integrate information from more than one channel. Eg. if playing with visual material and auditory information was fed in the visual task disintegrated. (cognitive process)
3. Deficits in auditory memory observed in recalling numbers, sounds, words and sentences. (cognitive process)
4. Deficits in temporal auditory sequencing displayed in problems coping with complex commands. (cognitive process)
5. Problems with auditory figure ground showing inability to localise sound and pick up word information from the ambient classroom. (cognitive process)
6. Problems in reauditorization seen in difficulties with synthesising and analysing words and affecting reading/ spelling. (cognitive process)
7. Limitations in symbolisation, abstraction and conceptualisation noticeable in reading, writing and number work. (cognitive process)
8. Problems in cognitive and logical processing noticeable in maths work. (cognitive process)
9. Reductions in the accuracy and speed of word labels and associations noticeable in word finding problems. (cognitive process)
10. Deficits in linguistic skills seen in the lack of facility in correcting ideas syntactically. (language skills)

COMMUNICATION DOMAINS



11. Residual evidence of phonetic and phonological difficulty with some sound substitutions, omissions and distortions. (language skills)

12. Problems in mastering and establishing meaning shown by inappropriate responses in conversation. (language function)

A model of communication is used to analyse the 12 problems presented by the 180 children with language difficulties. Diagram 2 represents this indicating that the 3 components of language skills, design and function are underpinned by haptic (touch, movement, sense of position in space), auditory and visual processes of recognition, retention/recall, association and integration of information. A brief description of the 3 major components is given below:

1. LANGUAGE SKILLS (CLARITY)

These refer to correct use of sound and sentence patterns to represent actual or imagined experience.

2. LANGUAGE DESIGN (CONVENTION)

This refers to the production of utterances which are appropriate to conversational contexts and are effective in fulfilling the speaker's aims. Included is topic initiation/continuation (the ability to bring up and expand on a subject in conversation) and dialogue moves (request, open/closed questions, contributory and maintenance comments).

3. LANGUAGE FUNCTION (CONDUCT)

This area concerns the speaker's self-presentational abilities and the



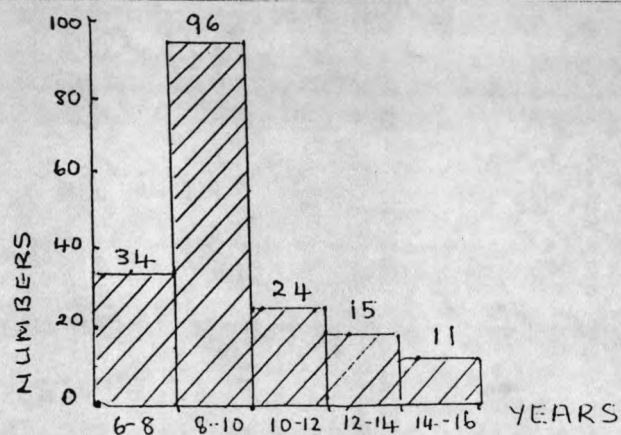
maintenance and transformation of social structures in communication. Included are aspects of positive/negative face, and meaning conveyed/not conveyed. On these principles depend a person's ability to take an active role in conversation and establish a good image.

Using this framework it is possible to analyse the 12 reported difficulties of the pilot group. Problems 1-9 are those of cognitive processing: 10-11 are language skills and 12 refers to language function. The fact that teachers perceived the problems as mainly in the underlying processes is of interest. Observation of management by teachers/speech therapists showed that intervention was directed at sound/sentence building (eg. Derbyshire Language Scheme).

The age breakdown of the pilot group is as follows: DIAGRAM 2.2.

6-8, 8-10, 10-12, 12-14, 14-16 years.

HISTOGRAM OF 180 CHILDREN TESTED ON ITPA



The diagram shows that by far the largest group was the 8-10 year band. This age marks a period when learning is becoming more dependent

on symbolic and abstractive skill and fluent reading for information/meaning is expected. Two main conclusions were drawn from this initial trial period.

1. Children with language difficulties were generally not viewed as a "problem" until experiencing learning difficulties in school (particular learning to read). Until this time there is happy optimism that children will grow out of speech and language difficulties. Parents and teachers view speech therapy as a means of accelerating this process.

2. Teachers and therapists were often unaware of the connections between oral and written language. The situation was perpetuated by a reluctance to cross professional boundaries. The attitude was that therapists should keep to correcting sound/sentence patterns in speech and teachers were to get on with the business of teaching reading. These isolationist approaches and division of problem areas work against childrens acquisition of a mesh of skills to support total language development.

The unhappy consequence is there are gaps in knowledge about the total process, and professional divides prevent the understanding of how learning problems in one area transfer and exacerbate other skill/process learning. Phonetic and linguistic assessments have little meaning for teachers and clinical therapeutic strategies may have limited utility in the context of the classroom learning problems.

## FURTHER INVESTIGATIONS

Logistical problems had prevented a complete ITPA investigation on all the 180 children in the pilot study. The 12 characteristics listed by teachers concerned with the sample suggested they viewed the language problems as mainly in cognitive processing areas. Observation of management by teachers/therapists showed that programmes of study were directed towards the removal of deficits in 'linguistic' areas. However, this group of children had been referred because they were failing to make progress. Thus it was felt that continued formal testing on traditional assessments would not yield more useful data. It was decided to make observations of a sample of ten children in each of the age groups illustrated in diagram 2.2. Observation would include speech and language skills and their underlying processes in the broader frame of communication capacities. Diagram 2.1 has clarified these.

A profile was drawn up to record responses in these areas and taped samples were collected of subjects in conversation with others and analysed to compare the three communicative aspects, detailed as:

### 1. LANGUAGE SKILLS (CLARITY)

Assessment consisted of taking a word sample (eg. 100 words) and counting the errors (omissions/distortions) in sound and sentence construction within a fixed number of syllables and recording this on the profile sheet (see appendix). Syllable count is the standard quantitative procedure in linguistic research.

## 2. LANGUAGE DESIGN (CONVENTION)

Transcripts of conversation were analysed to record topic initiation/continuation and the conversational moves of request, open/closed questions, contributory and maintenance comments and noted on the profile.

## 3. LANGUAGE FUNCTION (CONDUCT)

Responses on the transcript were analysed as positive/negative face and meaning conveyed/not conveyed.

Each child in the pilot classified as language disordered was compared with another child of similar age who was labelled by the class teacher as a successful speaker. A three minute tape recording was made of conversation and transcribed and analysed according to the communication profile (see appendix). Two colleagues were invited to consider the transcripts and record data on the communication profile. Reliability ratings of 0.81 and 0.93 were obtained. There was no attempt to match subjects for ability or social background as this would have produced enormous logistic problems at this very preliminary stage of the research. Therefore, any stated comparisons between children remain open to the influence of the free variables. Tables 2.3 & 2.8 document an example of these subject comparisons in each of the five age groups (see appendix). The resulting composite profile (table 2.8) indicates that children with language disorder show problems in all communication capacities when matched with dissimilar peers.

However, management indicated that training in sound/sentence building supported by "ad hoc" work on some underlying processes (visual/auditory recognition/retention/recall) had only taken place. This information was elicited from teacher/speech therapy records and conversations with parents and professionals. The fact that all these children had received some remediation in linguistic/cognitive processes may account for the fact that with age these abilities showed more improvement than language design and function (see profiles in appendix). Observation of the language disordered subjects indicated that other peers and adults did not expect them to communicate effectively and used strategies such as repeating/rephrasing of their responses so reinforcing their poor communicative images. Case study material in chapter 9 will illustrate this further and the transcript of Tom in the appendix to this chapter.

The profile used in the pilot study is a crude analysis of communication. For example, in the language function area there is no monitoring of paralanguage features - inflection, rhythm, cadence of vocalisation, posture, gesture, handling or facial expression (including eye contact) that are a vital part of establishing meaning and social acceptance in communication (Dimbleby & Burton, 1985). These features are difficult to compare accurately between subjects and impossible to log without video recordings which were felt to be less discreet and manageable than audio tapes.

Other problems refer to the subjective nature of the communication profile categories and their terminological confusions. To take an example: the term "request" is often used to refer to utterances which



demand a particular response from the listener, such as action or information. This can overlap with terms such as "directive" or "question". Within the category "request for action" there can be further overlap between terms such as "command" and "imperative". Often acts such as requests for clarification (repairs) are subsumed under the generic term "request". However, requests for clarification are special types of demands occurring in the context of actual or potential communicative failure holding up topic progress until the difficulty is solved. Thus, there is a continuing dilemma of levels of analysis and systemic possibilities.

More seriously there is the complication of many utterances performing more than one speech act simultaneously (for example, a request for action could be also an admission of one's own inability to do the act). Levinson (1983) criticises simplistic classifications of utterances in isolation from their actual interactional and sequential environments and argues that the speech act may not be an appropriate unit of analysis of conversational data.

However, the profile does supply a broad review that proves useful for further investigations, observations and produces the information base for studies in this research. It enables interactional (turn taking exchanges) and transactional (relevance, informativeness and accuracy) components to be reviewed. The data shows deficiencies in both aspects of conversation. However, closer examination reveals a failure to integrate these components and cope with competing constraints. As a result various coping strategies are used to maintain the semblance of competence. For example, the child with language disorder, recognises

the obligation to turn take in conversation. The pressure to respond conflicts with the requirement of content appropriacy resulting in the following strategies:

- 1) If the demands of accuracy and informativeness cannot be fulfilled, any answer which seems potentially appropriate is given.
- 2) If no such answer is possible a non-elliptical/stereotype acknowledgement is used.
- 3) If more is required one's own preceding response are repeated.
- 4) If all else fails saying "don't know" or changing the topic forms a suitable retreat.

Entry to these strategies is constrained by limitations in knowledge of the world which affects ability to represent events temporally and causally and describe and infer. There were examples in the transcripts. Speakers sometimes paused during explanation and the children with language disorders started up to fill the gap. Although appropriate behaviour at the level of turn taking this was irrelevant to content requirements. Other problems were found in handling information including predictions about plans, goals and probable courses of action. As far as interactional skills were concerned there was a need to learn how to assess the differences between own knowledge and that of the listener. Role play situations (eg. shopping/asking for information) are ways such abilities can be developed.

Therefore, in general it was felt the crude analysis was a sufficient guide to management. The view was that a more detailed coding of communication "acts" provides less additional value than is gained by less complex and laborious assessment. This is well illustrated in the

language design area when consideration of moves and topics is sufficient to highlight the dominating situations which restrict opportunities for children with language disorder.

The profile, therefore, collects information that monitors child responses in normal talk situations that occur naturally within the daily context. Knowledge of what goes on in these situations is the key to understanding what are the real problems a child experiences in communication and what situations intervene with the development of language for learning and socialising.

#### SUMMARY

The pilot study provides useful data for planning the direction of this research. The teachers' view of the childrens' problems when compared against the profile information shows a mismatch between perception and reality. Therefore, it is important to clarify the attitudes and views of those involved with remedial language education. A strong perception of deficits in the underlying language processes is indicative of a professional need to understand the nature of language difficulty more clearly. Therefore, the issues outlined in chapter 1 are reinforced and point to a need to investigate:

1. The nature of language disorder.
2. Attitude differences between those involved in management.

# COMMUNICATION PROFILE

SAMPLE LENGTH 10min

SUBJECT

(AGE)

LD

(7.2)

N

(7.0)

CLARITY		CONVENTION		CONDUCT	
LANGUAGE	SKILLS	LANGUAGE	DESIGN	LANGUAGE	FUNCTION
SOUND	SENTENCE	TOPIC	CONVERSATION MOVES	FACE	INTENT
C 73/100	C 54/100	TI 0	R OQ CQ 1	P 0	MC 2
I 27/100	I 46/100	TC 2	CC 3 MC 1	N 2	MNC 3
C 89/100	C 91/100	TI 5	R 4 OQ 1 CQ 3	P 12	MC 19
I 11/100	I 9/100	TC 7	CC 7 MC 5	N 0	MNC 1

C = correct: ie  
within norm

I = incorrect: ie  
omissions/  
distortions

Analysis 100 words

TI = topic  
initiated

TC = topic  
continued

R = request  
OQ = open question  
CQ = closed question  
CC = contributory  
comment  
MC = maintenance  
comment

P = positive response:  
agreement  
cooperation  
N = negative response  
non agreement  
refusal

MC = meaning  
conveyed  
ie: appropriate/  
precise  
MNC = meaning not  
conveyed  
ie: inappropriate  
imprecise

COMMUNICATION PROFILE SAMPLE LENGTH 10 min.

SUBJECT (AGE)	CLARITY		CONVENTION		CONDUCT	
	LANGUAGE	SKILLS	LANGUAGE	DESIGN	LANGUAGE	FUNCTION
	SOUND	SENTENCE	TOPIC	CONVERSATION MOVES	FACE	INTENT
LD (9.3)	C 75/100	C 57/100	TI 1	R 1 OQ	P 4	MC 3
				CQ 2		
H (9.3)	I 25/100	I 43/100	TC 2	CC 2 MC 5	N 3	MNC 2
	C 92/100	C 96/100	TI 9	R 4 OQ 2 CQ 6	P 12	MC 24
	I 8/100	I 4/100	TC 8	CC 7 MC 5	N 0	MNC 0

C = correct: ie  
within norm

TI = topic  
initiated

R = request

P = positive response:  
agreement  
cooperation

MC = meaning  
conveyed  
ie: appropriate/  
precise

I = incorrect: ie  
omissions/  
distortions

TC = topic  
continued

OQ = open question

N = negative response  
non agreement  
refusal

MNC = meaning not  
conveyed  
ie: inappropriate  
imprecise

CC = closed question

CC = contributory  
comment

MC = maintenance  
comment



## COMMUNICATION PROFILE

SAMPLE LENGTH 10 min.

CLARITY		CONVENTION		CONDUCT			
LANGUAGE		SKILLS		LANGUAGE		FUNCTION	
SOUND	SENTENCE	TOPIC	DESIGN	FACE	INTENT		
C 64/100	C 53/100	TI 2	R 1 OQ	P 7	MC 11		
			CQ 2				
I 36/100	I 47/100	TC 4	CC 7 MC 4	N 4	MNC 3		
C 98/100	C 96/100	TI 8	R 4 OQ 3 CQ 5	P 11	MC 24		
I 2/100	I 4/100	TC 9	CC 6 MC 6	N 1	MNC 0		

C = correct: ie  
within normI = incorrect: ie  
omissions/  
distortionsTI = topic  
initiatedTC = topic  
continued

R = request

OQ = open question

CQ = closed question

CC = contributory  
commentMC = maintenance  
commentP = positive response:  
agreement  
cooperationN = negative response:  
non agreement  
refusalMC = meaning  
conveyed  
ie: appropriate/  
PreciseMNC = meaning not  
conveyed  
ie: inappropriate  
imprecise

# COMMUNICATION PROFILE

SAMPLE LENGTH 10 min.

SUBJECT

(AGE)

LD

(13.7)

N

(13.6)

CLARITY		CONVENTION		CONDUCT	
LANGUAGE	SKILLS	LANGUAGE	DESIGN	LANGUAGE	FUNCTION
SOUND	SENTENCE	TOPIC	CONVERSATION MOVES	FACE	INTENT
C 61 100	C 64 100	TI 3	R 1 OQ 1 CQ 4	P 7	MC 12
I 39 100	I 36 100	TC 5	CC 5 MC 5	N 3	MNC 4
C 97 100	C 98 100	TI 8	R 4 OQ 3 CQ 7	P 16	MC 30
I 3 100	I 3 100	TC 9	CC 11 MC 6	N 1	MNC 1

C = correct: ie  
within norm

I = incorrect: ie  
omissions/  
distortions

TI = topic  
initiated

TC = topic  
continued

R = request

OQ = open question

CQ = closed question

CC = contributory  
comment

MC = maintenance  
comment

P = positive response:  
agreement  
cooperation

N = negative response:  
non agreement  
refusal

MC = meaning  
conveyed  
precise

MNC = meaning not  
conveyed

ie: inappropriate  
imprecise

# COMMUNICATION PROFILE

SAMPLE LENGTH 10min

SUBJECT

(AGE)

L.D.

(15.7)

N.

(15.4)

CLARITY			CONVENTION			CONDUCT	
LANGUAGE		SKILLS	LANGUAGE		DESIGN	LANGUAGE	FUNCTION
SOUND		SENTENCE	TOPIC		CONVERSATION MOVES	FACE	INTENT
C	76/100	C 78/100	TI 4		R 2 OQ 1 CQ 4	P 8	MC 16
I	24/100	I 22/100	TC 6		CC 5 MC 6	N 3	MNC 2
C	99/100	C 100/100	TI 10		R 4 OQ 5 CQ 6	P 15	MC 30
I	1/100	I %/100	TC 12		CC 7 MC 8	N 0	MNC 0

C = correct: ie  
with in norm

I = incorrect: ie  
omissions/  
distortions

TI = topic  
initiated

TC = topic  
continued

R = request

OQ = open question

CQ = closed question

CC = contributory  
comment

MC = maintenance  
comment

P = positive response:  
agreement  
cooperation

N = negative response:  
non agreement  
refusal

MC = meaning  
conveyed  
ie: appropriate/  
precise

MNC = meaning not  
conveyed  
ie: inappropriate  
imprecise

% of language Disordered children achieving half the score or less when compared with normal children of the same age on an assessment of communicative capacity, using a sample of normal conversation.

SUBJECT (AGE)	CLARITY		CONVENTION		CONDUCT	
	LANGUAGE	SKILLS	LANGUAGE	DESIGN	LANGUAGE	FUNCTION
	SOUND	SENTENCE	TOPIC	CONVERSATION MOVES	FACE	INTENT
6-8 yr	58%	61%	82%	84%	67%	75%
8-10 yr	57%	59%	84%	80%	66%	71%
10-12 yr	46%	45%	83%	81%	69%	76%
12-14 yr	40%	42%	85%	84%	70%	78%
14-16 yr	39%	41%	87%	86%	72%	78%
Mean	48%	50%	84%	83%	69%	75%



CHAPTER 3: THE DEVELOPMENTAL DIFFERENCE DEBATE: IMPLICATIONS FOR  
IDENTIFICATION & MANAGEMENT OF LANGUAGE DELAY.

DIFFERENCE/DELAY CONTROVERSY

Time and energy has been spent during the last twenty years attempting to determine whether retarded children show language delays or differences relative to cognitive level (Zigler & Balla, 1982)

On one side of the controversy is the developmental position advocated by Zigler (1969) and elaborated by Weisz, Yeates & Zigler (1982). This position, which applies only to individuals not suffering organic impairment, holds that handicapped and non-handicapped children pass through cognitive developmental stages (eg. those described by Piaget, 1970) in an identical order, but differ in rate and the upper limit of development.

On the other side of the controversy is the difference position. This states that retarded and non-retarded, even when equated for level of development, will differ in the cognitive processes they use in reasoning.

Weisz and Yeates (1981) have pointed out that the developmental vs difference controversy involves two separate hypotheses. One is that retarded and non-retarded pass through cognitive development stages in the same order. This has been referred to as the "similar sequence hypothesis". Most of the evidence, derived from Piagetian research (Weisz & Zigler, 1979) supports this view.

The second hypothesis concerns the similarity of the cognitive structures in retarded and non-retarded children at a particular cognitive level. This has been labelled the "similar structure hypothesis" (Weisz & Yeates, 1981).



The term "cognitive structure" represents the organisation of thinking and learning processes that underpin human understanding, reasoning and information processing. As Weiss, Weisz and Bromfield(1986) point out these cognitive structures can only be inferred from observable measures such as the effectiveness of problem solving and speed of learning. The similar structure hypothesis holds that retarded and non-retarded children of similar mental age (MA) will not differ reliably on such measures. However, many researchers have argued that retarded children are inferior to non retarded MA peers on a number of processes(Miligram,1973; Das,1972,1984; Das ,Kirby & Jarman,1979; Detterman,1979; Greenspan,1979; Inhelder,1966; Stephens & McLaughlin,1974; Spitz,1976)

In reality there may well be a compromise between positions. For example, some children may exhibit the same developmental sequence as "normals" but show a few points of difference. Also there may be variation according to the nature of the child's problems. Some children who deliberately injure themselves are clearly doing something "different", whilst others do seem just emotionally retarded.

It is not intended to go into detail about the vast number of studies in this area but to review findings on Piagetian and non-Piagetian cognitive measures. These are now summarised:

#### a) Piagetian Measures

Weisz and Yeates(1981) reviewed findings from thirty studies comparing the performance of MA matched retarded and non-retarded children on Piagetian tasks. Although most studies supported the developmental hypothesis Weisz and Yeates(1981) concluded that evidence was strong but limited in scope

since it was derived entirely from Piagetian reasoning tasks, which led them to go on and examine information processing measures.

b) Information processing measures

Weiss, Weisz and Bromfield(1986) report the results of studies from 1960-83 comparing retarded and non-retarded individuals on information processing measures. Performance of the retarded was significantly deficient in the areas of word, picture and object discrimination; serial and non-serial memory; association & integration tasks within and across modality.

The findings clearly present a dilemma: the developmental position seems to hold for Piagetian tasks but not for information tasks. Weiss, Weisz and Bromfield(1986) state: " findings may merely reflect what they appear to reflect: retarded persons suffer from various cognitive deficits that are more than a simple developmental delay".

In summarising this research it is likely that the cognitive domains that reveal differences are those within the information processing tradition. Piagetian tasks are sensitive to developmental changes in transitional periods during which children move from one stage to another. These tasks are less sensitive to within-stage differences. In contrast, information processing tasks were originally developed and designed to uncover individual and group differences. The measures obtained from these tasks are thus more discrete and sensitive to developmental changes within and across major developmental periods.

THE STRUCTURE VS PROCESS DEBATE

For many psychologists (Ellis, 1963; Sperber & McCauley, 1984; Borkowski & Turner, 1986) the developmental/difference controversy is part of a more basic structure/process debate. This questions whether deficient structures or processes define retardation. Those who adhere to the structural position attempt to find innate features/states that characterise retarded children's cognitive systems and claim these are relatively intractable. In contrast, those who support a process position believe that mental skills are acquired, easy to modify, and interact with higher and lower order components. The structural opinion is consistent with the difference position whilst the process view accords with the developmental belief.

Most of the structuralist explanations have looked for deficiencies in early stages of information processes. Ellis (1985) proposed that learning and memory difficulties in the retarded could be attributed to the decreased intensity and duration of the short term memory trace. Information in short term memory faded more quickly for retarded individuals and was less likely to be transferred to permanent store. Zeaman and House (1979) suggested that retarded persons attended to fewer dimensions of a stimulus than non-retarded subjects and were less likely to focus on the relevant dimensions of a problem. Sperber and McCauley (1984) found that retarded individuals encoded information more slowly than "normals". The pattern of findings is consistent with Weiss, Weisz and Bromfield's (1986) conclusion that retarded and non-retarded differ significantly in the area of memory.

Other psychologists (Belmont & Butterfield, 1971; Brown, 1974; Taylor & Turnure, 1979; Borkowski & Turner, 1986) have focused on the role that processes and strategies play in retarded individual's learning

difficulties. They have found that retarded persons often do not use rehearsal strategies to increase recall. Deficient strategies have also been found in paired-associate learning (Taylor, Spitz & Borys, 1977). Many investigators report success in training strategies to enhance performance on tasks. Butterfield, Wambold & Belmont (1973) improved the performance of retarded individuals to the level of untrained college students following extensive training of rehearsal and retrieval strategies. However, generalisation of skills to normal tasks proved more difficult. Problems in executive functions (Butterfield & Belmont, 1977; Casby & Ruder, 1983; Rice & Kemper, 1984; and Borkowski & Turner, 1986) and meta-memory (Borkowski, Reid & Kurtz, 1984) have been posited as sources for the generalising difficulty.

COMMENT:

Asking questions about retarded children's language and cognitive performance affects not only the kinds of research performed but also the identification and management of this population. For example, consider the effect that adherence to cognitive hypothesis has had on eligibility decisions for speech/language services. In general children are not identified as needing help unless there is significant discrepancy between language performance and cognitive level (Beveridge et al, 1988). It is, therefore, pertinent to review the identification and management of language delay at this point.

## IDENTIFICATION & MANAGEMENT OF LANGUAGE DELAY

Many areas carry out developmental screening procedures at around 3-3½ years, which include assessment of language. This generally requires that the child names some common objects and carries out simple commands. If he fails to do this, he may be referred to a Speech Therapist for more detailed assessment. Detailed screening procedures often take place on home visits by Health Visitors, but attendance at a clinic is generally required for a speech therapy assessment. If a clinic is difficult to get to, and the parent of the opinion that the child will grow out of his speech problem attendance may not happen. Chazan(1979)'s survey of children's needs suggests Health Visitors are less likely to identify problems than teachers or playgroup leaders. From this survey of 7,000 + children only 3.2% were identified as having speech and language difficulty. The National Child Development Study Peckham, (1973) gives a figure of 10-15% as having problems in speaking at 7 years, as identified by teachers and doctors. There may be a possibility, therefore, of children being identified when they start to fail at school. Recently, I looked up notes of children with language difficulties that I had seen as a member of a paediatric assessment team. These were children referred for problems in learning at school. Of the 22 children age 7-9 years, 9 had been previously referred to a speech therapist. 3 of these children had had some 'treatment' and had been discharged at 5 years because they were felt to be making adequate progress with speech development. Six of the speech therapy referrals had never been seen because they had failed appointments. Thirteen children were never considered as needing language help, although all of the mothers involved suggested there had been problems in speaking which they assumed



Table 3.1

TEST	AGE RANGE	PROCESSES ASSESSED	MODE	SCORING	UTILITY	PROBLEMS
<u>Intellectual</u> The Wechsler Scales	4 - 6 years Adult 6-17 years	<u>Verbal</u> - vocab., comprehension, memory arith., similarities, <u>Performance</u> - coding, obj. assembly, block design, problem solv., picture complete/arrang.	<u>INPUT</u> Auditory/ Visual <u>OUTPUT</u> Vocal/ Motor High structure Spontaneous	Norm referenced Global I.Q. Separate Verbal & Performance I.Q. Deviation I.Q. - of sub. performance w. scores in age grp. rather than complete range.	1. Cf. separate Verbal & Perf. function. 2. Cf. subtests for profile. 3. Wide age range. 4. Screens those at risk.	1. No diagnostic information as tests not comprehensive. 2. Measures receptive lang. skills & not syntax forms 3. ? Tests tap lang. ability eg. digit repetition ??
<u>Phonological</u> & <u>Grammatical</u> Edinburgh Articulation Test. E.A.T.	3 - 6 years	Developing phonology of consonants & clusters in various positions in words.	<u>INPUT</u> Auditory/ Visual <u>OUTPUT</u> Vocal High structure Spontaneous	Norm referenced Quantitative & Qualitative Analysis Age score Standard Score	1. Distinguishes 2 types of prob. delay - deviance 2. Identifies pat. assoc. w. other areas of pathol. (High freq. loss) 3. Model of normal articul. maturat.	1. Lim. information - only certain members of each sound group. 2. No inform. on phon. contr. & ability to signal mean. 3. Criteria for classificat. not clear.

TEST AGE PROCESSES ASSESSED MODE SCORING UTILITY

## PROBLEMS

TEST	AGE RANGE	PROCESSES ASSESSED	MODE	SCORING	UTILITY	PROBLEMS
Language Assessment & Screening Procedure L.A.R.S.P.	9 mth - 4½+ years	1. Sent. structure clause, phrase & word level. 2. Sent. types - statement question command exclamation	Samples of spontaneous speech - 1. Immediate environ. 2. Absent situations. Low struct. INPUT any mode OUTPUT vocal/ motor	Data scan. Quantitative measures used for indicating prog./regress.	1. Prov. dev. for remed. lang. errors. 2. Systematic means of planning remediation. 3. Measurement of efficiency of remedial methods. 4. Standard form for repres. of abil./disabil.-cf of profiles.	1. Long. complex analysis. 2. Limited information - structure. 3. Cannot deal w. semantic & psychol. factors which enter compreh. 4. Primarily based on production. 5. Low structure situations can lead to error bias.
Psycho - Linguistic The Illinois Test of Psycho - Linguistic Abilities I.T.P.A.	2½ - 10 years	Levels of Organization Representational abil. to deal w. meaningful symbols auditory/visual Automatic abil. to deal w. non-meaningful symbols-short term memory sequences	INPUT auditory/visual. OUTPUT vocal/ motor	Global scores give idea of overall funct. Scaled scores transform raw scores for mean perform. at each age & construct prof. of abilities. Psychol. age norms.	1. Relates cognitive & lang. performance. 2. Assesses wider range of abil. than other tests. 3. Programme based on I.T.P.A. 4. Strengths used to compensate weakness. 5. Claimed as diagnostic tool. 6. Generates ideas about cause. 7. Broader perspective on factors affecting language.	1. Can lead to remed. for cog. abil. without relation to language. 2. Assesses sep. abil. & not integration of function. 3. ? Model - eg. can cog. abil. cause language. 4. No assess. of linguistic ability.

would right themselves. Significantly perhaps, the major problems when assessed at 7-9 years were with syntax rather than phonology. Such subtle difficulties are rarely spotted or thought to be of any significance.

Late referral, may mean that a Therapist/Teacher will have to work with failure and the emotional difficulty that situation brings. Is there strong evidence, however, to suggest that once children reach a Speech Therapist, problems that might prevent learning are clearly identified?

#### Assessment Procedures of Children with Language difficulty.

The very nature of language difficulty makes children difficult to formally assess. Generally, such children do not adequately process the spoken word, and do not easily develop the level of attention necessary to co-operate with an adult. A formal test situation dependent on following adult instructions may not always be possible. In assessing language behaviour, therefore, naturalistic approaches based on observation rather than standard tests, are to a greater or lesser extent in use. These are clearly more subjective and involve considerable expertise. There is no guarantee that therapists will always be accurate in judging other people's behaviour.

These two main approaches to assessment, however, may lead to different strategies in management and remediation, so it is worth considering them in more detail.

#### Formal Assessment.

Standard tests can be broadly grouped to assess three main language areas - intellectual, phonological/grammatical and psycholinguistic. Table 3.1 gives an example of a commonly used assessment under those groupings and provides a summary for comparison.

It is clear from the table, that there are many processes involved in language - and not all can be assessed or observed adequately.

The physical making of sounds is the end of a system involving not only the physical nature of sounds but how knowledge of language governs problems, and how this varies in the social context. The key elements of

ideas, code, conventional system, context and communication can represent aspects in defining problems in language. Children with language difficulty may have problems in forming ideas, or conceptualising information about the world; difficulty in learning a code (word symbols with their sound, word, sentence and rhythm structure,) for what they know, or the code they learn does not match the conventional system. They may learn something about the world and conventional code but not be able to use it in speaking and understanding in certain contexts or for certain purposes. They may develop the conventional code, but later than their peers. The processes of sound making, grammar, prosody symbolisation, meaning and socialisation are clearly involved. Different theories have developed to explain the language processes and form the basis for tests/assessments. No theory, however, focusses explicitly on the interplay between simultaneously developing processes.

Tests therefore:-

1. assume                      different theories
2. obtain                      different information
3. give                        different results

Every test is likely to have some problems in interpretation of data and limited utility.

#### Differences and Problems in Tests.

Differing Tasks - some differences relate to the differing tasks used to measure performance. Some tests are visual, some motor, or use a combination of stimuli to elicit responses (see Table 3.1). Some tests have limited/closed sets of responses from which a child can choose. ( e.g. Illinois Test of Psycholinguistic Abilities (I.T.P.A.). Visual reception/association - also, vocabulary tests E.P.V.T. and Peabody.) Other tests are more open-ended (e.g. auditory association I.T.P.A.) British Picture Vocabulary Test (revised Brimer & Dunn, 1962) Peabody (Dunn 1965).



Differing Linguistic Contexts - other differences relate to the variety of language behaviours sampled. The English Picture Vocabulary Test (Brimmer & Dunn 1962) is mostly concerned with nouns, the Boehm test of basic concepts (1969) with relational words, the I.T.P.A. auditory reception test, with verbs and semantic features of words used with them. The grammatical closure test of the I.T.P.A. taps only grammatical morphemes, particularly the plural, whilst the North Western Syntax Screening Test (Lee 1971) covers a broader range of grammatical structures. Such limited samples may not indicate everyday language competence and different norm referenced scores can result because of different linguistic contexts tested and different tasks used.

Confusion - the test material itself may be confusing. In picture/object stimuli it is impossible to hold visual variables constant so that one picture/object is not more salient to the child than any others in a choice task. By virtue of its colour, or inherent interest (e.g. boys and cars!) or position in the display, any one object/picture can distract full attention from the others. It is difficult to portray complex sentence structures and children with disordered language frequently have problems in integrating visual scanning tasks with verbal signals from the examiner (Griffiths 1969).

Bias. Test situations are often too constrained and limited in context to fully assess language, but freer situations can impute bias and limit responses. This was demonstrated in the case study used as an example in The Introduction to Chapter 2. The Case History recorded that the child at Five years scored at a three year level on syntax and a 3½ year level on information in the Renfrew Action Picture Test. The Language Assessment, Remediation and Screening Procedure (L.A.R.S.P.) Crystal (1976) showed a Stage III 2-2½ years level at the same chronological age. My observations



Table 3.2Assessments on 52 Children with Language Difficulty

<u>TESTS</u>	<u>percentage</u>
<u>INTELLECTUAL</u>	
Wechsler Scales	11%
English Picture Vocabulary Test	7%
<u>PHONOLOGICAL</u>	
Edinburgh Articulation Test	47%
Other (personal test)	5%
<u>GRAMMATICAL</u>	
Carrow Comprehension Test	3%
Crystal Language, Assessment, Remediation & Screening Procedure	1%
<u>PSYCHOLINGUISTIC</u>	
Reynell Comprehension/Expression Scales	49%

of the child in the home environment demonstrated a Stage IV level with object and adverbial expansion and many permutations of clause structure in use. Assessment results, therefore, may encourage experts to make inaccurate judgments about language performance. Children, moreover, may not lack linguistic resources, but experience has not taught them what people do with language.

#### Differences amongst Professionals.

As well as differences and problems among tests themselves, there exist differences and problems amongst the professionals dealing with assessment of children with language disorder. Authorities have varying criteria as to what they feel is necessary to test in the case of a child with language problems. In one area where I work hearing test results are a necessary pre-requisite to referral for language and speech assessment - in another area they are not and often difficult to obtain without delay. Intellectual and comprehensive psycholinguistic function need the services of a psychologist and referral depends on such arbitrary considerations as length of waiting list and attitudes of parents and teachers. Speech Therapists themselves have professional licence to decide how and when to assess each 'client'. Patchy collection of data results when a child is passed on rapidly from therapist to another. The 13th Speech Therapist of a 6 year old boy referred to me recently said "each therapist involved has used a different method of assessment and looked at different aspects, so that I find it difficult to get a picture of the child's problems".

#### Comment.

In 1978, I did a personal survey of 52 children referred to me from speech therapists with language difficulty. Table 3.2 indicates the formal tests these children received. One might certainly query the adequacy of formal assessment in these cases, in terms of the range of language skills tested. Frequently therapists feel that they should not spend too much time on

assessment, but should get on with the treatment. A busy clinician tends to reject lengthy, complicated assessments such as L.A.R.S.P. A strategy of observation through treatment is adopted. Therapists, however, are generally not trained in systematic observation techniques, so their observations are dependant on assumptions that may well obscure important features of child behaviour. Nevertheless, informal naturalistic approaches are necessary to compensate for problems encountered in formal test situations.

#### Informal Assessment.

Assessment is only justified if it provides a useful guide to management and remediation when working with children. It is easy to justify a naturalistic approach. This involves observing children in natural settings, at home or school while interacting with parents or teachers. The situation is more relaxed than a formal test session, and because the people and context is familiar responses are less likely to be inhibited. Not only is the natural situation more conducive in creating an accurate picture of the child, but also provides the optimum context for acquiring language skills though giving no standard comparisons.

A number of studies investigate the Mother's role as causal agent in a child's acquisition. Snow, (1978) suggests that in talking to children, mothers create situations in which certain conditions are met to help establish effective communication. This is empirically illustrated by the work of Katner & Bruner (1979). They suggest that simple appearance and disappearance games establish certain rules of taking turns which help children learn the convention of conversation and how to communicate effectively. Similarly Mørk (1976) stresses the significance of interpersonal relationships between children and adults in acquiring language. From a clinical perspective there have been a number of papers discussing the importance of naturalistic approaches. Mahoney (1975) has suggested that interpersonal factors may be causal in the development of language among mentally retarded and autistic children. Language thinking- ing is not expected

because of diagnostic labels and is not encouraged in verbal interaction. Similar arguments have been put forward by Snyder & McLean (1976) and Brooks & Baumeister (1977). Beveridge & Brinker (1980) stress the importance of understanding the way in which retarded children interact with each other and establish reciprocal relationships with teachers. Such thinking is already making some impact on management strategies for children with language difficulty. McConkey Jeffrie & Hewson (1979) have examined the role of parents in extending the language of young mentally handicapped children. After training, parents were made responsible for carrying out relevant language activities at home and proved very successful in teaching children not only to name objects but structure two word sentences. In the studies of Seitz and Hoekenga (1974) Seitz & Riedell (1974) and Seitz & Marcus (1976) parents were videotaped playing and talking with children and a qualitative assessment made of interactions. Therapy concentrated on teaching parents how to elicit language rather than the language problem itself. The studies showed improvement in the way parents reacted to children as well as overall language performance. More recent work by Clezy (1978/79) has resulted in a language programme for parents. The first part of the programme is designed to reduce parent anxiety by helping mother to employ appropriate strategies of reinforcement. She is then taught to implement the language programme by adopting an interactive approach. To help this Cevette (1979) has developed a 'Reinforcement Profile' which enables Therapists to record observations of mother child interchange systematically. It is suggested that the profile enables the mother to reflect critically on her effectiveness as 'a therapist' and assist the clinician in determining procedures leading to improved language procedures. A similar approach has been adopted by Cheseldine & McConkey & Price (1986) McConkey (1979) with Down's Syndrome children at a 1-2 word stage of expressive language. Parents were given a goal to work for - but no instruction on how to attain it. The most successful parents spontaneously altered their language and by using more selected target words in short

utterances helped children to learn these more quickly. These studies, therefore, highlight a different strategy for those involved in assessment and remediation.

A naturalistic approach extends and to an extent alters the traditional roles of teachers and therapists. By involving the patient's family and friends, clinicians become more exposed and have to justify their procedures to non-professionals - and thus become more accountable. Therapeutic change which is specific only to the clinic setting or dependent on the presence of the clinician is of little value in helping adjustment to the real world. Consequently, the ways and extent to which assessment and remediation can relate to natural environments is important.

Set against this, is the fixed organisational structure within which therapists and teachers have to work and rules and procedures which have to be followed. Formal testing is often the only practical possibility but unfortunately leads to the focus on the child - his failings, shortcomings, and deficiencies. Remediation is aimed at improving "weak skills" or using stronger abilities to overcome weaker ones. Researchers such as Coles (1978) see this as leading to the position where biological basis gives rise to learning problems, so shifting responsibility for failure to learn, away from clinics, schools, communities and other institutions. We are, therefore, focussed away from the general educational process, away from the need to change institutions, and away from the need to rectify social conditions affecting the child, and away from the need to appropriate more resources for social use, toward the remedy of what is seen as a purely medical problem. It is a classic instance of what Ryan (1972) has called 'blaming the victim'. That is, it is an explanation of a social problem that attributes its cause to the individual failings, shortcomings, or deficiencies of the victims of the problem. Most recent sources have moved away from "within" to "without" child factors (Leudar & Antaki, 1988; Leudar & Browning, 1988; and Westwood, 1988). Formal tests, thus lead to attempts at remediation on the child rather than on the social context in which the child must perform. They may, therefore,



divert from the real problems the child is facing in coping with life and produce inaccurate pictures of performance.

My own working experience produces examples of this situation. Recently I have been asked to support a 6 year old boy transferring from a Language Unit into his neighbourhood school. My 'job' is to work out his curriculum needs and give extra help to the child and teacher. Formal assessment at 6 years 2 months on the Wechsler Pre-School & Primary Scale of Intelligence (W.P.P.S.I.) (1967) for use on children 4-6½ years old gave him an overall quotient of 80 using 100 as the standard mean. Language testing using the Carrow Test of Language (1973) gave an age level of 5 years 10 months. Both these tests use norms based on American populations. The comment of the psychologist and the speech therapist was that he would cope well with his age group in a normal school environment. Four weeks of observation and working with him in a so-called normal classroom context suggest general functioning at a pre-school level. Taped samples of language, as well as testing on the Renfrew Language Scales, put language at a 3-3½ year level. This boy cannot carry out even simple commands unless strongly supported by context and his expressive language shows no recursion strategies - ideas are linked in telegraphic style with content words only. Basic concepts are limited - big and little are not yet stable. Although he has been taught to name colours he does not use this ability because he cannot classify or sort without help. He can match pictures, shapes and colours and label them - but only when given help to do so. Attention control is limited to one channel and not sustained for more than ten minutes. Motor development shows a lag below the 3 year level. He finds it difficult to sustain standing balance and cannot hop, skip or jump. There are problems in co-ordinating arms and legs in any physical activity. Fine motor ability is also clumsy - but he has been taught to copy write his name. He cannot yet draw a recognisable form or put eyes, nose and mouth on to a model face.

Painting indicates that he is still at the stage of applying paint over paint. He has not yet demonstrated any ability to create anything himself. When left to play with bricks he piles them into a corner. His one delight is dressing up although this does not yet extend into any imaginative play routines.

Although a month after entry is rather early to make a definite statement about this child's longterm needs - at the present he functions at a pre-school level and clearly could not cope with the formal work that the other children are doing. Much of what goes on appears to have no meaning. However, this little boy does have some good skills. He is friendly and likeable, and imitates well - which helps him to cue into school routines. It is possible these skills produce a 'halo effect' and make him appear rather better than he is.

Time will reveal the nature of the discrepancy between formal tests and actual performance. We suspect that he may have been trained for the tests. His previous class teacher, in the Language Unit, made the comment that she felt that he would be unable to cope in a normal school environment, but this piece of observation seems to have been ignored.

Tests, therefore, can provide a different picture to the natural one, and are often perplexing to teachers who know the children well. Frequently, the tasks of formal assessments are unrelated to those of normal life and children are measured against norms that are quite different from those of their own environments.

Some professionals, therefore, favour naturalistic assessment and remediation, although it is difficult to evaluate the efficacy of this kind of approach. Clinicians work with individual patients and tend not to be in a position to evaluate different strategies. Practically, it is not always possible to conduct 'treatment' in the patient's natural environment.

This may present a dilemma for therapists and teachers. On one hand they are accountable to employers and the other to patients or pupils and the

two are not always in accord. What constitutes the best assessment and therapeutic approach for the patient may not fit in with what is possible from an administrative viewpoint. When I worked in a Paediatric Assessment Unit I was not allowed to visit a child at home, at a normal mealtime to assess feeding patterns in a situation where there was known to be problems. These had to be advised on from discussion with mother in the clinic, and although one tried at times to set up a meal-time situation - this was never really successful.

In real life it seems, therapists and teachers have to accept responsibility within the context of what in practice can be achieved. There will, thus, be a continuing need to improve existing formal approaches in assessment and remediations as well as making much more use of informal approaches in generating changes of behaviour in children with problems.

## DIRECTIONS FOR ASSESSMENT

The review of literature on the delay/difference debate has indicated substantial agreement amongst researchers on significant differences between retarded and non-retarded subjects in basic information processing abilities.

The pilot study in chapter 2 showed that teachers perceived these as basic problems in learning and management, reflected in attempts to train deficits although results did not show significant improvements in performance as there was minimal attention to these relative to sound/syntax correction. Therefore, the first task of this research study emerges: to clarify the information processing capacities of language disordered vs normal children.

The next section devotes itself to a review of strategies leading to assessment of information processing capacities in preparation for the study.

### Strategies for Language Assessment.

The Oxford dictionary defines language as 'words and their use'. We are all familiar, however, with the saying "actions speak louder than words". People do not always say what they mean or mean what they say. Words can reveal and conceal. How do we catch them and measure them?

As previously discussed language arises from a context, giving rise to the sort of communications expected. It has a conventional arrangement or structure from which we evolve meaning. The whole process is dynamic and changes over time and involves incoming, organising and outgoing components. Many activities are involved, hearing, attention, listening, comprehending, associating and linking information, memorising, organising, speaking. The components are interdependent and constantly interactional and readjusting because of feedback. The system is complex, so how is a suitable framework for assessment and remediation evolved? For the sake of practicality it is necessary to impose some sort of relatively static structure on the system in order to study and make sense of it. The system has to be classified so that potentially useful variables can be identified and hypothesis generated about their relationships.

How we do this is dependent on what we need to know. Our task is to find a method of Assessment that reflects the tasks that language has to perform in a structural learning context, where verbal skills form a basis for the learning of secondary language activities of reading, writing and mathematics. In order to do this we need to know how learning takes place, so that we can assess the relevant components in the process.

We shall thus need to know the performance of the main input channels involved in learning - auditory, visual and haptic (touch and sense of position in space). What utility, however, has this information for the secondary language learning activities of reading, writing and mathematics? For instance, in reading, one has to be able to take in recognise and remember the visual patterns and link this with the word that one already knows. Being able to cope with two-dimensional form indicates an ability to use single stimulus input, that is, the form is perceived visually only. This stage is only reached after other developmental features are established. For instance, in order to appreciate and cope with forms of the same shape but differing orientation, such as p, b, d, q, u, n, w, m, z, n, one must have developed awareness of self in space and relationship of one object to another. This is very dependent on haptic processes. In writing, one depends on learning the sequence of movement for each letter - the relationship of touch (holding pencil) and movement through space again depends on intact awareness of one's self in space and relationship of one object to another. This spatial awareness is also necessary to the execution of accurate movements in speech, and is important in building up concepts of spatial position (in, on, under, in front, behind, left, right etc.) Visual input is also vital for this. Vocabulary, as we have seen, builds from coding sound to an associated object, activity or even more abstract concepts. The ability to discriminate visually size, shape, colour and other features is important as a base on which to form concepts and attach verbal labels.



Learning, therefore, must depend on successful liaison of input from visual, auditory and haptic channels. In considering problems of learning, therefore, it would seem imperative to devise assessments that differentiate the case which a child manipulates haptic, auditory and visual information.

An assessment aimed at isolating channels and processes may seem pedantic, for in normal learning there is much crossing of modalities. Visual percepts and concepts often become verbalised and verbal concepts may arouse images and inter-relationships which in turn may or may not become verbalised. Likewise an auditory stimulus may activate a motor response and a visual stimulus arouse a verbal one. There are, however, practical implications in the observation of behaviour that takes place when materials are presented in each channel. Such information has clinical utility in planning teaching.

For instance if a child was found to have poor auditory and visual memory but a rather better haptic memory, one might decide to teach words, using tactiles or tracing techniques. Where auditory ability is poor and not adequately compensated by good visual perception, touch may be encouraged to teach shape awareness. Poor haptic ability preventing learning of letters may be helped if auditory/visual ability is good by encouraging verbalising, while making the motor movement sequence for the letter W = W. Encourage the child to say down, up, down, up, while the letter shape is made. Visual relationships may help in letters causing confusions, e.g. bd draw a bed = bd, e.g. S draw a snake

Linking a written symbol with something familiar can aid retention. If one has the information to draw up a profile of strengths and weakness that assessment of each channel gives - one can avoid progress by trial and error, cut out risks of failure and develop more meaningful approaches to suit the child. Being able to dish up such information and hand it on a plate to a teacher who has major responsibility for learning - cuts out a lot of effort and time. Therapists have the luxury of the whole child for themselves and

so should develop this service. Teachers have to cope with getting to know 30+ children and it may take a year to do so, by which time the child has to move to another class. Therapists, therefore, are in a more favourable position to study the child and provide the sort of information that has utility for all concerned. That is the main purpose of the assessment to translate information into terms that mean something for a child learning in a formal school context and following a remedial language programme.

#### Modes of Processing.

The aim of the assessment is to provide information that will help in formal learning, so it is necessary to understand what this situation requires. Formal learning has a heavy dependence on symbolic thinking involving the recognition, understanding and use of letters, words and numbers. These are highly abstract and depend on a child's ability to 'decentre' or consider events from another point of view. (Piaget 1977), and make links between existing knowledge and sets of arbitrary symbols. These abstract modes are steps away from a child's reality but are immensely important to coping with life independently. They require sustained levels of attention and an ability to integrate information across channel adequately, retain and link it with other experiences. Reasoning and problem solving precede the final response.

A high level of existing skill is obviously needed and we need information on the following.

1. capacity to recognise stimuli produced in sequential order.
2. capacity to scan the pattern and compare, associate it and link it with other impressions and remembered patterns.
3. capacity to hold the stimuli in mind (memorise them), hold the sequential impression so components may be integrated into some pattern.
4. capacity to respond differentially and meaningfully to perceptual impressions, as in an integrated task. The assessment, therefore, has been divided into four areas to cover these needs.

1. Recognition - involving matching tasks.
2. Association - involving comparison and linking tasks.
3. Retention - involving memory tasks.
4. Integration - involving all previous components in integrated complex tasks. (haptic, auditory, visual). The aim is to find data that will enable one to judge whether the difficulty in processing is specific to one process or generally diffused with problems in more than one area and across modalities. Dividing up processing into four distinct areas of recognition, association, retention and integration might suggest that it occurs in four steps, one after the other. Encoding and decoding, however, occurs as parallel processes, although a stimulus has to be there before a response is made. The processes are totally interactive, and in reality there is no beginning and end as the modes would suggest.

It is quite impossible to completely isolate skill areas. In auditory recognition, for instance, we have more than one skill used simultaneously, recognition, discrimination, sequencing, memory, as well as the conscious intellectual processes involved in comparing one sound/sound group with another to arrive at a decision. These may play little part in spontaneous subconscious recognition. In each subtest area, attempts are made, however, to keep other skills in low loading. If weakness is indicated the clinician/teacher will aim to provide the child with greater opportunities for hearing and discrimination.

#### Relevance of Assessment procedures and remediation.

An assessment aimed, therefore, at breaking down the whole process of communication hopes to provide a broader view of the total language activity. In attempting a breakdown of the language system we are following a trend in dissatisfaction with global constraints. There has been a move away from categorising children according to common behaviour syndrome - or slotting them into categories - of deafness, mental retardation, aphasia and emotional disturbance. (Warnock 1978).

This orientation to precipitatory factors had major influence on handling remediation and has led those being involved in decisions to think of each category as distinct and different and feelings that causes rather than symptoms should be treated. Unfortunately the reasons for lack of language or severe delay are not reversible without attention directed to symptoms. There is no general cure for mental retardation, deafness or aphasia, although some medical conditions causing these can be cured, e.g. phenylketonuria causing mental retardation and otitis media causing conductive deafness.

One can succeed in changing the nature of the language problem only by attempting to change behaviour of language. The child, with hearing impairment may benefit from medical treatment or amplification, but will usually need help in learning language. Such a child may also need as much help with emotional adjustment as a child labelled emotionally disturbed. If the primary cause continues to be a maintaining factor and is manipulable - it should be treated. In all instances, however, present ing conditions also need direct help. The behaviour of each individual viewed in terms of a goal, will determine the content of the remedial programme. If the goal is language development, behaviour relative to the content, form and use of language has to be considered. Other factors (.e.g. emotional/physical) must be taken into account whether precipitating the difficulty in learning or not.

There have, therefore, been shifts away from interest in the precipitating factors of a language problem and towards diagnosis of a child's strengths and weaknesses in those abilities and skills presumed necessary for the adequate development of language. (Kirk, 1965). <sup>For some time "</sup>there has been a shift from global to modular categorisation with each child viewed in terms of strengths and weaknesses. There have been two approaches within the specific abilities orientation - one has focussed on delineating weaknesses in cognitive abilities and directly teaching to those weaknesses with the goal of improving such skills - the second has attempted to change brain functions more generally, and thus remediate deficits in cognitive, particularly perceptual skills

through indirect means as sensory motor training. (Ayres, 1975). This enhances ability to orient in relation to the environment and improves social relationships and self concept (Bloom & Lahey 1978). This approach has had most impact for the learning disabled, but it is clear these problems are integrally related to language disorder.

The most influential and most elaborate attempt to diagnose specific disabilities has been the Illinois Test of Psycholinguistic Abilities (I.T.P.A. - Kirk, McCarthy & Kirk, 1968). The purpose of diagnosis is to identify specific areas of defective functions and the purpose of intervention is to provide appropriate remediation in areas identified. The I.T.P.A. was based on a three-stage mediational Model of Language ( Osgood 1965) and included the processes of reception, association and expression, the modalities of input and output and levels of processing. The test purports to tap auditory and visual channels of sensory input and motor and vocal channels of output at two levels (1) automatic where information is integrated and organised but does not involve mediation of meaning. (2) representational - involving processing of meaning and use of symbols.

The assumptions made are that abilities are distinct in learning and use of language, and that each is a necessary pre-requisite&can be strengthened, if required, by training. Although Newcomer, Hare, Hammond & McG ettigan (1973) through factor analysis of I.T.P.A. identify separate abilities, Ryckman & Wiegierink (1969) conclude this is not supported for young children. It appears difficult to separate perceptual skills from knowledge of language so that low scores may indicate that language in general sense is not well learned. Hammil & Larsen (1974), Newcomer & Hammil (1976) and Sowell & Larsen & Parker (1975) are thus opposed to skill remediation, and do not see it as a way of improving everyday language competence. Proposers of skill training such as Kirk (1966), McCarthy (1964) Karnes (1966) Bush & Giles (1977) and others see it as providing motivational impetus, and a means



of planning materials. Differences in viewpoints arise because no two problems are the same. For example an auditory recognition problem may be due to lack of word experience, brain pathology, which defies word understanding, or poor discrimination, to name only a few reasons.

There is, therefore, little agreement about the exact role played by psycho - linguistic abilities in the acquisition and use of language. The controversy arising from the claims that such deficiencies are either causal in the development of the skills of language, or are simply a reflection of poor language ability, in the first place, is impossible to resolve.

A parallel argument centres round the wider issue of the relationship between language and thought, and as pointed out by Brunner (1975), language sometimes determines thought and acts as a 'mould' and at other times language can act as a 'cloak' and represents what is already known. It is further argued that to some extent individuals are able to choose how they use language depending upon the situation and level of intellectual development. McTear (1985) reviews studies in this area.

This argument could be extended to the current problem. It does not seem unreasonable to suggest that in some cases there are certain cognitive abilities underlying language performance. Comprehending conversation, for example, clearly involves auditory short-term memory and the general ability to sequence information. In other situations though, language, itself, is almost certainly the medium used to code information related to cognitive performance. For example, describing objects or recording certain information in short term memory, both involve the use of language to organise cognitive activity.

Successful remediation will depend on how the teacher/therapist modifies her/his approach to the child. The information provided by our assessment which compares performance in different modalities helps in analysing the situation before analysing the task. Without such data, a strategy would be

based on guesswork - and could lead to unfortunate trial and error approaches and too many experiences of failure. The need to find a system that can be understood by teachers and therapists is crucial.

It is felt that the I.T.P.A. is too complex in construction, with difficult instructions varying for differing age groups. Its division of representational (utilizing symbols) and automatic (involving integrated patterns) skills seems unhelpful for as Hilgard & Atkinson (1967) explain - most learning falls between these two levels. The I.T.P.A. test tasks are too abstract and do not relate to normal language function, or to learning tasks in school. Much of the material is out of child experience (e.g. histogram, meteorite) and presentation is poor and not standard throughout (.e.g. photographs and black and white outlines are used.) Many tests have other skills in high loading and so data can be confusing.

The Haptic, Auditory, Visual (H.A.V.) assessment to be described in this study, attempts to remedy these problems and provides a tool for generating ideas and hypotheses about the possible causes of language disorders. It looks at language in the context of other cognitive functioning and in such a way as to enable therapists and teachers to gain broader perspectives on the factors affecting children's language disorders. The data obtained from seeing how a child processes information on different channels is seen as necessary to determine the procedure or context of intervention and not the goals of intervention.

Specific training of weak skills is not particularly advocated, as recommended by the Kirks from their I.T.P.A. information, as there is no real evidence that such remediation of specific abilities leads or transfers to a general improvement in knowledge and use of language (Bush & Giles 1977). If, however, a child is poor on auditory memory activities one would, for instance, suggest to those involved that it might be helpful to break down input to the child into manageable chunks of information and not present or overload with a complex stream of instruction.

The aim would thus be, to evaluate the information from all subtests for a total strategy of teaching and learning. The information, therefore, aims to help in making decisions regarding appropriate teaching strategies.

Present assessments tend to look at specific parts of the process and encourage approaches aimed at improving isolated abilities. Linguistics, as we have noted was not studied by therapists routinely and not formally assessed. It may be this situation has not changed in spite of analysis such as Language Assessment, Remediation & Screening Procedure (L.A.R.S.P. Crystal, 1976 ) now being available. Table 3.2 noting the assessments carried out on 52 children with language difficulties in Leicestershire, suggests a limited assessment procedure. The examples discussed have also exhibited the problems and bias of assessments currently in use.

The model of the H.A.V. is, therefore, seen as appropriate to the structured restricted context of the formal learning situation. In a normal communication situation, such a model would be less appropriate and unable to cope with 'freer' contexts. The assessment, as discussed, aimed to reflect tasks that language performs in structured learning contexts. It is in these formal learning contexts that under-developed language skills poses the most problems. Language competence and performance relates to the situation, where a child can control and manipulate this, he may minimise difficulty and cope adequately, e.g. if he fails to understand, he can play for time, stall and encourage another attempt , divert the situation and get away with gestures instead of verbal responses. Difficult situations can thus be avoided or minimised. In the structured context of school learning, a child becomes more dependent on adequate levels of verbal processing and response as a basis for further learning activity. There is less opportunity for manipulating contexts so that difficulties become more apparent and less easily avoided. It is very necessary, therefore, to have assessments that provide information for effective input. Its utility is in gaining insight into why the child performs less adequately than he should - so that the right context can be devised.

The assessment is not seen as being primarily of diagnostic value. Any one test cannot diagnose a disorder on the basis of a bad result. Variables such as race, social class, emotional reaction to the test situation may cause a poor performance. Any test, therefore, has little value on its own and should be interpreted in the light of other investigations.

Recent Research supports the need to be cautious in making any inferences about a child's language performance. (Hughes, Tizard, Carmichael, Pinkerton, Silliman, 1986; Spreen & Hauf, 1986; Bashir, 1987; Roth, 1987) (1979). Results are likely to reflect systematic differences in social relationships between a child and an adult. So long as the Therapist/Teacher is a relatively remote stranger, generating an environment very different from home, the child is not so likely to respond freely and so false impressions are easily made. The importance of this should not be under-estimated. Testing and assessing has to be treated with the caution it deserves - it never can be the perfect answer - but if judiciously used and provides information we need to know can lead to more confident, efficient, useful strategies of management.

#### SUMMARY

Reviews of studies in child cognition and the preliminary investigations to this project (chapter 2) indicate a need to clarify the underpinning processes to language and establish whether there are significant differences between language disordered children (LD) and normals (N). This is important to establishing correct input to children in order to facilitate their learning. Therefore, the next chapter describes procedures devised to demonstrate a child's processing of haptic, auditory and visual information. These are used in a study to compare the performance of LD and N children. Quantitative and qualitative data is collected as a basis for further studies.

This forms the first hypothesis: Children with language disorder demonstrate differences in cognitive behaviour compared with normals on structured tasks designed to measure their information processing.

## CHAPTER 4

### DESCRIPTION OF THE HAPTIC, AUDITORY AND VISUAL INVENTORY

In Chapter 3, it has been explained, that an Information Processing Approach is used to look how children deal with incoming stimuli. This looks at RECOGNITION, ASSOCIATION, RETENTION and INTEGRATION skills. Although these processes are interactive, the tasks, for each area, attempt to have other skills in low loading. For example: In the Auditory Recognition Tests, stimuli are presented, in pairs, to minimise MEMORY LOADING.

This processing approach, comes largely from the application of the COMPUTER CONCEPTS to PERCEPTION and COGNITION. The growth of computer technology, after the second world war, suggested, to many people, that this model might be applicable to the study of MENTAL PROCESSES.

A computer receives INPUT (in this analogy - SENSORY INPUT) and processes it, in various ways, to yield some OUTPUT (response).

Most typical of the Information Processing Approach, is the flow of information from one stage processing to another. It is important to realise that the approach does not assume the brain is a computer, just that it is profitable to see if it can be modelled or compared to one. (See Diagram 4.1)

This Chapter, is devoted to looking at the Inventory, in detail, and describes the TESTS for the THREE AREAS, in the following format:-

1. INTRODUCTION. 2. DESCRIPTION OF THE TESTS. 3. RATIONALE.

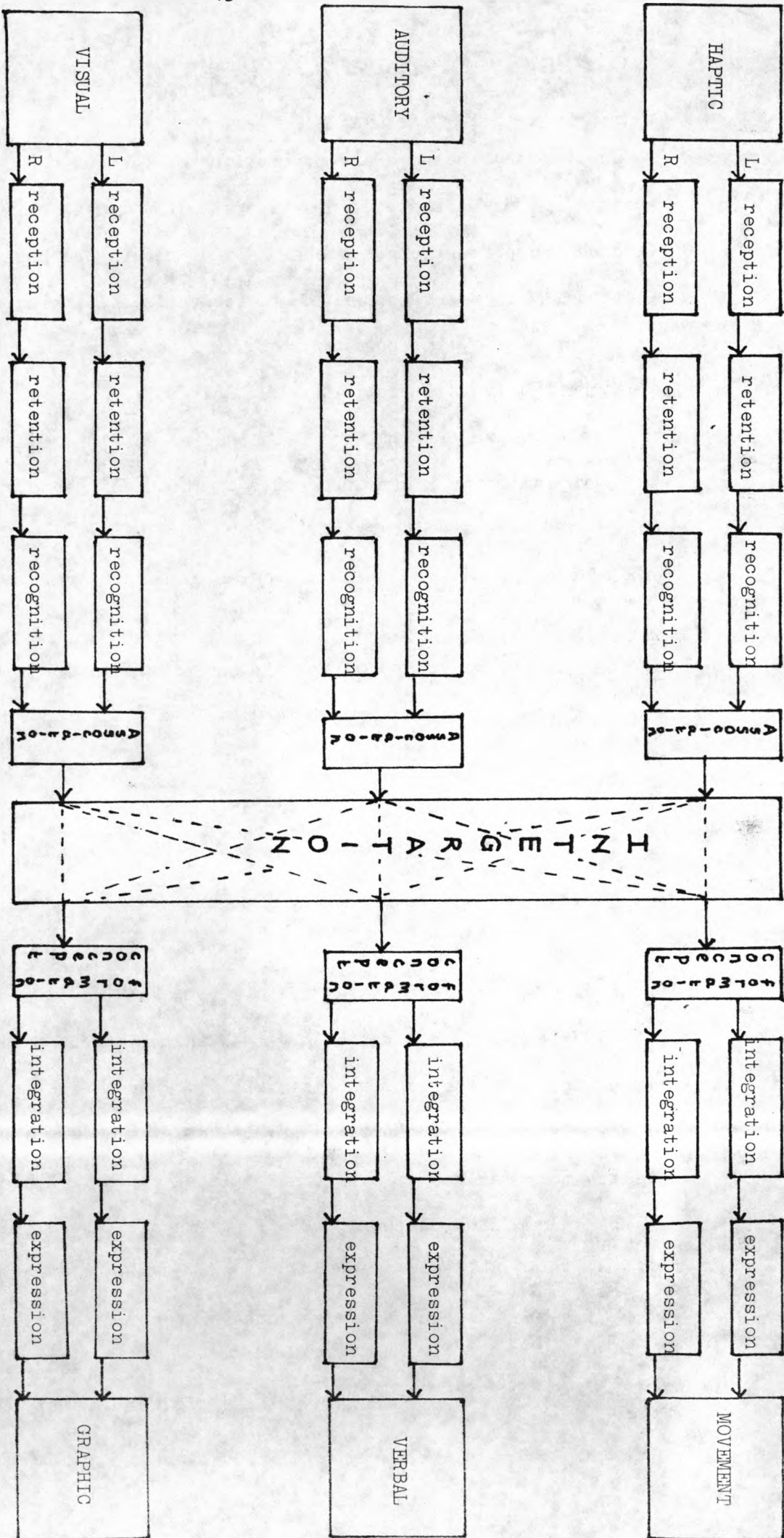
### HAPTIC AREA

#### Introduction

The word 'HAPTIC', comes from a Greek term, meaning, 'able to lay hold of'. The Haptic System, is the means by which the individual gets information about both the ENVIRONMENT and his BODY. He feels an object relative to the body, and the body relative to the object. It is the system, by which we are literally in touch with our environment, and relies on TOUCH (sense of cutaneous pressure) and KINESTHESIS (awareness of position and movement), and includes the NEURAL PROCESSES, by which one perceives one's body in



DIAGRAM 4.1



relation to objects and space.

Touch(taction) includes all perceptions of the environment, such as geometric information(size, shape, line and angles), texture, pain and pressure.

Kinesthetic perception or proprioception refers to those sensations derived from bodily movement concerning the body itself, including dynamic movement patterns, static limb positions or organ postures(as in speech sound production) and sensitivity to direction.

The system, however, includes more than sensations of touch and kinesthesia as it includes the neural processes by which one perceives the body in relation to objects and space.

Unlike the specialised systems such as eyes and ears, the sense organs of the Haptic modality are ubiquitous and active. They are everywhere in the body, in most of its parts and on all its surfaces. What's more, they are embedded in the motor organs. Equipment for 'feeling' includes equipment for 'doing'. Stimulation of greatest importance comes from proprioceptors when they are moving. It is for this reason, therefore, that oral and manual form recognition tests are chosen for assessment of these areas. These rely on the ability to move objects around with tongue, lips and jaw: the radial and ulnar parts of the hand as well as specialised movements of finger pads.

The work of Rutherford and McCall(1967), Baker(1967), Moser and colleagues (1967), McDonald and Aungst(1967) show that tests of oral form recognition appear to be related to speaking ability. There will be more detailed discussion of this later in the chapter. The work of Kimura(1973) suggests that this relationship may concur with hand movement ability. Analagous disturbances of speech and hand movements were found in patients with left hemisphere damage. In my clinical experience, I have frequently noted that children with disturbed speech and language have problems in building the sequences of hand movements, developing ideas of word space and producing a rhythmic flow of movement. It is for this reason that a test of movement sequence, in spatial format, is introduced in this assessment.

The Haptic channel is much neglected in teaching, but does have great importance for learning to speak and write which depend on the integrity of touch and movement processing. From the point of view of spoken and written language the mouth and hand have most significance.

The first section, therefore, concentrates on recognition of objects in the mouth and hand and ability to match movement sequences. This depends on appreciation of the space arrangements of object and movement parts representing a problem of orientation. The significance of this for speaking and writing is elaborated on later in the chapter.

Obviously it is important to retain spatial arrangements, their sequence and orientation so the retention subtests embrace both these aspects.

Speaking and writing activities involve linking touch and movement experiences and so the association section deals with this aspect. Can a child categorise such experiences? Does he recognise the one different in a group where two are the same and the others not? If such a skill is not present it will be difficult to understand the overall nature of an integrated task.

Integration is the last subsection, involving mouth and hands in a touch and movement task. Natural speech sequences generally involve hand gestures and writing often involves subliminal vocalisation as observation will demonstrate. Can the child integrate these aspects in an everyday situation such as folding a piece of paper and putting it into an envelope and licking two different sides for sticking?

The materials for the section include plastic geometric shapes and pipe cleaner forms used for the movement sequences. A piece of paper and envelope are used for the integration task. Throughout the tests the subject is blind folded (shaped black card on elastic) so that no visual information is imparted. For each section of the test, all scored items are preceded by examples for practice.

## Description of Tests

### Discussion of Stimuli

#### Plastic Shapes

By laying hold of something a person can detect size, shape, texture, consistency and temperature, by mouth and hand. In actual practice, this function is examined using everyday objects. Under these circumstances one is testing not only recognition of shape, as one of the attributes of the object given, but in addition a higher function in which the attributes must be associated with a specific object of which the person must have had prior experience. The use of nonsense shapes would encourage the subject to resort to semi-intellectual processes of identifying and coordinatinedges and corners by tracing with tongue tip/finger. Such a tracing mode would, therefore, be encouraged and this is only one mode of Haptic perception and not the fundamental exploratory one.

The stimuli materials, therefore, used in this investigation were drawn from a pool of twenty plastic geometric forms developed at the National Institute of Dental Research. NINE forms were drawn from the pool to represent a wide range of individual item difficulty and confusability as reported by Moser et al(1967). The NINE forms(see appendix) are subdivided into geometric classes: triangular, rectangular, oval and biconcave. The pairing of forms makes possible 'within class' and 'between class' stimuli pairs.

The shapes are made of 'Trevalon X', a radio opaque polymethcrylate, which was specially chosen, so that should one of the shapes be accidentally swallowed it could be easily traced by X-Ray. Most geometric forms used in studies are constructed with an attachment device embedded in each, to facilitate handling and as a precaution against accidental swallowing. Steel orthodontic wire, nylon monofilament and plexiglas strips are generally used, and La Pointe and Williams(1971) find no significant differences among conditions in either response accuracy or time. In this study, monofilament line inserted through a small hole in the shape, was used with the idea that



more flexible intraoral and easier manual manipulation would be possible. The shapes are 3mm. thick (other dimensions are shown in the Appendix) and are all of the same plastic substance. Objects of differing materials have differing temperatures which distort size perceptions (Markova, 1900, Hoffman, 1885). There was no attempt to vary texture.

Temperature and texture were not felt to be important dimensions in this context, as in essence, form recognition involves sequential tactile examination of the exposed edges of test objects. Perception of shape is primarily an appreciation of the spatial arrangements of parts of the object and thus represents a problem of orientation in a microspace.

Studies reported in Bosma (1967) indicate that children as young as three years of age can be tested for oral and manual form recognition. This study includes an age range of 4-8 years.

#### Direction of Movement Sequences

Movements for letters are based on straights and curves. The maximum span in our letter alphabet is four - eg. (letter W) and the minimum is one - eg. (letter l). A number of letters include straight and curved movements as in p, b, d, q, n, j etc. An appreciation of orientation of letter forms, as well as movement sequence is necessary. Letters are often confused because of problems regarding orientation in space. eg. N Z, p b d q, u n, W, M, j l f t. Aspects of movement sequence, direction and position in space are thus important to letter formation as well as in the use of manual gestures in non-verbal communication. Problems in discriminating such elements may relate to difficulties in self perception, or perception of self in relation to objects/forms in space. (Bryant 1974)

Stimuli used in the assessment are pipe cleaner figures stuck onto card - each section measuring 2" (see Appendix). The pre-pilot studies showed that pipe cleaners were more acceptable to fingering than other rough surfaces such as sandpaper or velcro strips. The starting place for each movement is marked by a metal disc, which is smooth and cold, in contrast to the warm



woolly feel of the pipe cleaner shape. Information regarding movement span, direction and orientation is sought from the assessment.

#### Administration

The test begins with a game to ensure the subject has a basic knowledge of shapes and knows the concepts of SAME and DIFFERENT. Three pairs of shapes are produced separately, from a set of pocket logiblocs. 1) circle and square. 2) square and rectangle. 3) large and small triangle.

The child is required to find corresponding pairs to match from a nearby group of eight shapes. viz. circle, square, rectangle, and triangle in large and small sizes. Once this is established the oral, manual and movement tests begin.

#### General Instructions

'We are going to play a game with shapes today. I am going to put a mask over your eyes, while I put shapes into your mouth for you to feel with your tongue. Look, here are two shapes. I am going to put them in my mouth and feel them with my tongue for 20 seconds. Like this. DEMONSTRATION. Now you try.(blind fold). Open your mouth, feel the shapes. Tell me/show me if the shapes are the same/different'. Similar instructions are given for the manual test.

After the oral and manual subtests, the shapes are washed in soap and water prior to being placed in an antiseptic solution for sterilization. The shapes are rinsed thoroughly in cold water and dried before presentation to the next subject.

#### Exploration Time

This was set at twenty seconds, based on the work by Grong(1973) and Bath (1978) who found improved scores after ten seconds exploration time.

#### Procedure

##### Recognition

Oral - Stimuli - geometric plastic shapes.

The forms in each stimulus pair(see appendix) are presented simultaneously

into the blindfold subject's mouth. To prevent visual/manual cues, subjects are not allowed to handle stimulus materials. The subject is allowed to retain the forms of the pair for a period of twenty seconds, and manipulate in any oral fashion desired before indicating whether the two forms are the same or different.

Manual - Stimuli - geometric plastic shapes.

The subject is again blindfold and two shapes(see Appendix) are placed on the table in front of the child. The subject is asked to pick them up and feel them for a period of twenty seconds and indicate whether the forms are the same or different.

Movement - Stimuli - pipe cleaner figures on card.

The blindfold subject is instructed to feel two different patterns and indicate whether the two are the same or different.

1. Show the writing hand fist clenched with the index finger pointing straight.
2. Adjust the child's arm so that it is parallel to and 2-3" above the table surface. Hold his/her fingers towards the tip, index and second finger either side of the top joint holding it against the thumb. Practise a few movements to reduce any rigidity.
3. Lay the cards(with 2 figures) directly in front of the child, but at a comfortable distance for tracing the lines.
4. Take the child's finger and place it at the start of the first section (on the metal disc). Trace the line: say:'We start here', before tracing the first section, and:'That's the end', when the last section is completed. Trace each section smoothly in one second with a momentary pause at each section junction. (Think one hundred. Stop. Two hundred. Stop. etc.).

Scoring

There are 4 points for each section, 1 for each correct response, adding up to a total = 12. i.e. Oral = 4 Manual = 4 Movement = 4

### Association

#### Oral - Stimuli - geometric plastic shapes.

The general instructions are the same as the previous section. Three shapes are introduced and the subject has to indicate the different one in the group( see the Appendix).

#### Manual - Stimuli - geometric plastic shapes.

The general instructions are the same as the previous section. Three shapes are introduced and the subject has to indicate the different one in the group( see the Appendix).

#### Movement - Stimuli - pipe cleaner figures on card.

The general instructions are as before. There are three figures for the subject to indicate the different one in the group.

### Scoring

There are 4 points for each section, 1 for each correct response, adding up to a total = 12. i.e. Oral = 4 Manual = 4 Movement = 4

### Retention

#### Oral - Stimuli - geometric plastic shapes.

The general instructions are as before. The blindfold subject is presented with shapes orally and separately in two sequences and has to indicate whether the sequences are the same/different.(see the Appendix). The time allowed is twenty seconds.

#### Manual - Stimuli - geometric plastic shapes.

The general instructions are as before. The blindfold subject is presented with shapes into the hand separately in two sequences and has to indicate whether the sequences are the same/different.(see the Appendix). The time allowed is twenty seconds.

#### Movement - Stimuli - pipe cleaner figures on card.

The general instructions are as before. The blindfold subject has to trace the pipe cleaner figure with the pointing finger and then keeping the movements of the figure in mind - trace it, as he remembers it, on the blank card by its side.(see the Appendix)

The examiner draws the figure, reproduced by the subject as a finger tracing, on to the record sheet for marking.

#### Scoring

There are 4 points for each section, 1 for each correct response, adding up to a total = 12. i.e. Oral = 4 Manual = 4 Movement = 4

#### Integration

Stimuli Materials - one A4 size sheet of paper and matching envelope.

The blindfold subject is instructed to: 1. Fold the paper 2. Put it in the envelope 3. Stick down the sides of the envelope.

#### Scoring

There are 4 points for each section, as detailed below.

1. Folding paper 4 points if the paper is folded accurately in line.

3 points if the paper is folded but not in line.

2 points if the paper is folded, but does not fit envelope.

1 point for any attempt at folding.

0 points for no attempt at folding. eg. rolled instead.

2. Putting in 4 points if slid in envelope easily with no retrials.

envelope 3 points if slid in envelope on 1 trial but experiences difficulty.

2 points if slid in envelope with more than 1 trial but does succeed.

1 point if slid in envelope but does not manage to get the paper in.

0 points if no attempt is made at placing in the envelope.

3. Sticking down      4 points if both sides of the flap are licked and pressed down correctly.  
the envelope      3 points if both sides of the flap are licked but not pressed down correctly.  
                         2 points if an attempt has been made to lick part of the flap.eg. 1 side only licked and pressed.  
                         1 point if an attempt made to lick the flap, but not the right part.eg. licks a part with no gum on it, but attempts to press down and retrials if unsuccessful  
                         0 points if attempt to lick the flap is unsuccessful and no closure made, and no attempt at retrial.

### Rationale

#### Significance of Haptic Skills

Haptic processes are generally ignored in assessment and education, but contribute greatly to knowledge of the world and knowledge of the self. Movement and touch are basic avenues of early learning. Learning occurs in response to stimuli, and even at birth a baby can respond in certain ways. Such responses are reflex and are protective in nature and have survival value. eg. the sucking response. If a new born baby's lips or cheek are stimulated by touch, he will search with head/mouth movements for the teat, breast or bottle. When the teat is in the mouth he will immediately suck for milk. As maturation occurs the newborn gains control over body movements and reflexes, which are then integrated into organised movement patterns. These physical movements generate a variety of sense stimuli and information which is stored in the brain, accumulating and becoming interrelated until the baby has an organised body of knowledge from basic touch and movement exploration. To this he relates stimuli through eyes, ears, nose and taste buds.

What particular knowledge from this sense area contributes, therefore, to the development of speech and language?

There are, it would appear, at least three significant contributions.

#### 1. Tactile and Proprioceptive Feedback in Speech Production

Speech, like any other complex bodily activity requiring coordination of muscular movements, can be accurately controlled only when the speaker



has adequate feedback about the progress of the activity. Two main feedback circuits, exteroceptive and proprioceptive, are used in the production of speech. The exteroceptive circuits include auditory feedback, reporting on bone and air conduction of sound in the ear, and tactile feedback, reporting on contacts between different vocal organs. The proprioceptive feedback circuits report on the tension of the muscles and movements of the joints. The auditory feedback system is comprehensively described by Békésy(1967) and the tactile and proprioceptive systems by Hardcastle(1969 72,85) . Such detail is irrelevant to this present discussion, but it is important to mention the experimental methods that have been used to indicate the sort of sensory receptors present in the oral region and how these provide feedback information, in terms of trains of neural impulses which have importance for the control of speech production.

One way of investigating the role of such feedback is to interfere with individual feedback mechanisms and study the effects of this on aspects of speech production. Auditory feedback can be altered readily by applying masking white noise to both ears. Tactile and possibly proprioceptive feedback can be altered by anaesthetic techniques. A number of investigations involving sensory alterations of this type have been carried out.(McCroskey, 1958, Weber,1961, Guttman,1954, Ladefogel,1967, and Ringel and Steer.1963  
Ringel et al,1968,1970) Of these investigations, those of Ringel and Steer are the most carefully carried out and controlled. They studied four speech variables; articulation, duration, average peak level and fundamental frequency, under six experimental conditions:-

1. Control
  2. Binaural masking noise
  3. Topical anaesthesia (applied to the surface of the oral mucosa)
  4. Nerve block anaesthesia (injecting anaesthetic into the lingual and infra-orbital nerves)
  5. Topical anaesthesia and binaural masking noise
  6. Nerve block anaesthesia and binaural masking noise
-

In their Summary, the Authors stated: 'In general, under conditions of nerve block anaesthesia, speech is characterised by significant increments in amplitude of performance, lack of rate variability and articulatory inaccuracy. Finally, it is reported that for certain speech output variables the effects of multiple sensory disturbances are cumulative in nature'. The authors' results agreed with other investigations (Guttman, 1954, Weber, 1961) that the condition of bilateral lingual block anaesthesia resulted in more articulation errors than occurred during a condition of normal feedback. They found no significant effect on articulation under the topical anaesthesia. This result agreed with a study by Weiss (1969). In all these experiments no adequate means of quantifying the articulatory data was used. Most of the investigations relied on subjective responses from a panel of judges. Clearly instrumental methods for providing quantitative data on aspects of speech production are essential. Electropalatography (Hardcastle 1969) will prove invaluable in providing detailed information concerning the temporal and spatial aspects of tongue and palate contacts.

The above investigations, however, suggest that both tactile and proprioceptive feedback are more important than auditory feedback in the control of speech production.

## 2. Haptic Perception

Not only is spatial awareness necessary to the execution of accurate movements in speech, but is important to the building up of concepts of spatial positions (in, on, under, in front, behind, left, right etc.).

The Haptic awareness of one's self in space and the relationship of one object to another is essential to understanding the meaning of many words. In view of language development, it is also important to know how well a child can structure what he feels. Perhaps he fails to learn concepts of soft, hard, rough, etc. because he cannot perceive/feel the difference. Kamhi (1981) and Kamhi & Johnston (1982) have produced studies in this area but results are confusing and methodology in question as subjects were tested under different circumstances.

### 3. Personality, Thinking and Feeling

Awareness of self, and the relationship of movement to personality, thinking and feeling, is supported from the experience of artists and scientists rather than scientific study.

Bernard Leach, the Potter, said in a lecture in London in 1973; 'I make a pot with my whole body'. Einstein observed that his scientific thinking did not occur in verbal images but in the form of optical and kinaesthetic images of movement. 'Verbalisation is only the final and very laborious work of editing!'

Others made similar comments, but seem to have recognised them from observing other people, whereas Einstein's observations came from his own bodily experience. (Sauvy 1974). Surely though, it is only through relating such observations of others to personal body experience that they can be understood and verbalised.

The relationship between kinaesthetic awareness and thought processes and inner feelings is clearly recognised by the Swedish psychoanalyst, Dr. Szekely (1973), when he discusses the 'creative pause', which is often necessary, in life, before finding solutions to problems, or making an imaginative leap in Art or Science. He puts forward the ideas that : 'the operation of thought develops from internalised action, and in many persons thought contents are not verbalised but are realised consciously in actions as the kinaesthetic perception of movement or as the optical perception of the movement of foreign bodies.' In speaking and writing creatively, are we, therefore, merely giving voice to evolving states of thought and feeling?

This would follow the view of Piaget (1957), whose stages of thought and behaviour were initiated by motor actions, from which developed internalised representations (thought) and the phenomena of operational thinking.

These operations depend on internalised actions which form a reversible and coordinated system.

Haptic information, therefore, appears as crucial underpinning for thinking, feeling, understanding and speaking - all important components in the primary communication system. In the secondary system of written language, its integrity is essential for the interpretation of 2-dimensional letter forms and the recognition of forms that are the same but are different in visual status and name according to orientation. eg. p, b, d, q, u, n, l, j, Z, N, M, W, etc.

#### Significance of Particular Skills

It has been previously stated that the Haptic system is ubiquitous. This particular assessment is confined to oral and manual areas only for the following reasons:-

1. The mouth and hand often cooperate in spoken and written language.
2. Studies of these areas show moderately consistent results. (Bosma 1967)

#### Studies of Oral and Manual Sensory function

Rutherford and McCall (1968) have indicated that oro-facial sensory deficiencies are independent of sensory defects involving hands. Knowledge of the function of each seems important as the mouth and hand often cooperate in exploration in the young infant. It explores objects brought to the mouth and the tactual acuity of lips and mouth seem to arise earlier in development than that of the fingers. (see the Skill development Chart in the Appendix). Knowledge of the independent use of these skills is essential to the developmental course of effective liaison between vision and touch in space and orientation perception. Disability or difficulty may have consequence for the general development of intersensory patterning. Research into oral and manual sensory processing reported in Bosma (1967/70) uses differing investigations such as form recognition, 2-point discriminations and tactile sensitivity. Form recognition tests were reported as most reliable, showing significant moderate correlations with articulation and hand movement. It is generally accepted that impairment of form

recognition capacity in the presence of otherwise intact sensory channels is indicative of central nervous system pathology (Forster 1973, Wechsler 1947, McDonald and Chusid 1962, and Neilsen 1965). These researchers attribute this to lesions of the parietal lobe (post-rolandic gyrus) and/or subcortical regions. It may be hypothesised that information pertaining to the ability of children to make judgements of object shape upon the oral and manual presentation of stimuli may yield important insights into the nature of the oral and manual sensory mechanisms.

In clinical settings, form recognition is tested by placing common objects such as keys, pens, coins etc. in the subject's hand. Obviously such practices are not applicable to the oral region. Modifications of stimulus materials and response modes were initiated by a number of investigators interested in this area. Some have attempted to assess oral form perception abilities of persons with various forms of nervous system, oral structure and communicative behaviour disturbances, using 2-dimensional geometric plastic forms in an oral-tactile to visual matching procedure. The findings of these investigations were reported in the First Symposium on Oral Sensation and Perception (Bosma 1967), and additional findings are reported in the Second Symposium (Bosma 1968). The relation between tasks modified for use in the oral region and traditional stereognostic testing has not been specified. In general, results of studies of oral form functioning are not consistent, but do support the view that persons with organic pathologies (central nervous system and oral structure) and speech defects experience difficulty in these tasks. The variability of results reflects the use of many different methodologies and stimuli materials.

Conclusions from the Bosma Studies, must, therefore, be viewed cautiously. The informants were usually allowed to use their visual systems in the process of matching stimuli objects. As Weinberg (1968) noted, experiments have not measured oral sensory capacity itself, but rather some aspect of



intersensory matching. This would place severe restrictions on the information such testing procedures might yield. For example, a person who is 'visually deficient', but 'tactually normal' would exhibit poor oral sensory abilities if visual functioning were an integral part of the tactile matching task. This criticism becomes pronounced if a traditional view of the speech servo system is accepted. In such systems, visual process interaction with oral system tactile monitoring is not implied. It appears, therefore, that a test which attempts to provide information about the tactile modality must be limited primarily to that modality and not lend itself to sources of contamination by involving other channels such as vision. This has been achieved, with the assessments described in this research, by eye masking in the Haptic Oral, Manual and Movement tasks.

After early enthusiasm for oral stereognosis testing (Bosma, 1967/8) a lack of clear cut results led to neglect of the method, although Macaluso-Haynes (1978) recommends its use in articulation disorders. Studies by Ostreicher & Hawk (1982) and Oliver et al (1985) have revived interest in this area.

#### Directional Movement

Appreciation of directional movement, memory for sequence, and general form is important knowledge not only for the learning of spatial concepts, but particularly for learning the movement patterns of letter shapes in word sequences. Where visual and auditory memory ability is poor, a child with rather better memory for movement sequence may use this skill in tracing to improve learning of letter shapes for reading, writing, spelling and speaking. How the child copes with this ability has consequence for teaching individual sounds in speech, as well as for language in general. Directional movement, therefore, forms the third part of this assessment. There appear to be no published studies on this skill area and its correlation with speaking and writing function. The Kimura Study (1973), however, shows that left hemisphere damage results in difficulty with copying a series of manual movements. There is further support for the relation between speech and certain manual activities by observing the hand movements of people while they are speaking. Speech is usually

accompanied by gestures, in which the hands move freely in space without touching anything. Such movements are hardly ever seen during non-speech vocal activity such as humming. Free hand movements during speech are made primarily by the hand opposite the hemisphere that controls speech. Since this is usually the left hemisphere, it is the right hand which makes the free movements, but if speech is controlled by the right hemisphere, the left hand makes more free movements. (Kimura 1973)

These clinical findings, by Kimura suggest an overlap between the speaking system and the system controlling certain kinds of manual activity. My own clinical experience suggests that problems with speech are generally linked with problems in writing. It is an area worth exploring systematically.

In conclusion, therefore, it is suggested that the possible overlap of speech and movement systems demands an assessment involving mouth, hands and directional movement.

Recognition, retention, and association areas have, therefore, separate oral, manual and directional movement components.

In the integration task, all three functions are involved in folding a piece of paper, getting it into an envelope and sticking the flap, while the subject is blindfolded. This is a useful task to observe the quality of a subject's problem solving strategies.

## AUDITORY AREA

### Introduction

Auditory capacity involves an ability to produce and understand meaningful units from the sound, word and sentence patterns which form our Language.

This process has many aspects, and involves:

- Recognising sound stimuli
- Linking the sounds with other experiences
- Remembering word sequences and the underlying rule systems governing sound and word combinations
- Comprehending the overall meaning in an integrated context.

The first section of the assessment involves recognition of basic vowel and consonant segments, their combination in syllables, and the underlying melody and stress which organises meaning.

Obviously the ability to retain a sequence of sound and word symbols in their conventional arrangements is essential for overall understanding and grasp of intention. The auditory retention tests, therefore, require imitation of word and sentence patterns.

Using Language meaningfully needs an ability to link word and knowledge patterns. The association sub-tests, therefore, tap linguistic and cognitive links that are necessary in the use of creative language and the expression of cause and effect. Cloze procedures, in a single sentence, are used for this, but language processing demands the more complex skill of following an extended discourse (eg. - a story) and abstracting meaning from the subject and the sentence.

In the integration subtests, therefore, the task chosen is that of reproducing verbally two short stories. This gives opportunity to study language use in the reporting of facts.

The skills of recognition, retention, association and integration are necessary for following a speaker's intention and understanding a

written text. They are essential for school learning and coping with the demands of everyday life.

#### Description of Tests

#### Discussion of Stimuli

The following materials are used in this section of the Assessment;

#### General

A mouth mask, so the subject is encouraged to listen to sound and not look at the examiner's facial movements.

#### Specific

#### Recognition Tasks

1. Lists of sounds
2. A buzzer, mounted on a plinth, used for rhythm matching task

#### Association Tasks

Sentence list requiring cloze procedure

#### Retention Tasks

Lists for imitation of words, nonsense words and sentences. There is a separate list for each of the four age groups.

#### Integration Tasks

Two short stories for the subject to retell after the examiner has read them.

#### Procedure

#### Recognition

There are four subsections to this test, each containing 12 items for scoring. Details of the items are included in the appendix.

The sections are:

1. Vowel and Consonant Matching. The sounds used are representative of the commonly used phonemes, pure vowels and diphthongs.
2. Syllable Matching. The sound combinations used are: consonant/vowel (cv), consonant/vowel/consonant (cvc), consonant/consonant/vowel/consonant (ccvc), and consonant/vowel/consonant/consonant (cvcc)
3. Intonation Matching. A standard front closed vowel /i:/ is used in the seven English tunes.

1. Low fall - the voice falls from a medium to low pitch.
2. High fall - the voice falls from a high to low pitch.
3. Rise fall - the voice rises from low to high pitch and falls to a low pitch.
4. Low rise - the voice rises from a low to medium pitch.
5. High rise - the voice rises from a medium to high pitch.
6. Fall rise - the voice rises from high to low and rises to medium pitch.
7. Mid level - the voice maintains a level pitch between high and low, neither rising or falling.

4. Rhythm Matching. A buzzer is used to produce sequences of SHORT ( 1 second ) and LONG ( 2seconds ) sound.

Each section is preceded by practice items.

#### Administration

The Appendix gives details of the sounds in each section.

The subject is presented with two sound sequences, by the examiner, and asked if he will indicate if they are the same/different: like/not alike.

For example: In the first section there are four sound pairs presented:

ae/u a/i e/i ae/ae. The correct response is given after each one.

The subject is then given four pairs for practice. Each subsequent section is introduced with the practice items only. There are 12 items for scoring in each section:

1. Vowel and consonants.
2. Syllables.
3. Intonational Contours.
4. Rhythm Sequences.

#### Scoring

Each correct response scores 1 mark. The maximum total for each section = 12 marks. The maximum total for the whole auditory recognition area is 48 marks.



### Association

Items for this section, as in previous sections, are reproduced in full in the Appendix. There are twelve items in this group, comprising sentences requiring cloze procedures. The examiner reads a sentence and leaves a gap for the subject to fill with the correct verbal response. The sentences are designed so that the responses require the understanding and use of a variety of word forms. The examiner uses the mouth mask so that no visual clues are available.

### Scoring

Each correct response scores 1 mark. The total possible maximum = 12 marks.

### Retention

Lists of words, nonsense words and sentences are available in the Appendix. This section uses elicited imitation as a method of data collection. The assumption is that in order to reproduce the words/sentences accurately, which are beyond immediate short term memory, the child will have to process the response indicative of his/her linguistic system.

To cover the range of language capacity between 4 - 8 years, four tests of words, nonsense words and sentences are used. Each list is to be utilised with a particular age group. ( 4/5, 5/6, 6/7, 7/8 years)

Within each list, an increase in phonetic, syntactic and/or semantic complexity between 1 - 12 has been attempted.

### Administration

Each age group is given a different list of words, nonsense words and sentences, in three sections:

1. Twelve words
2. Twelve nonsense words
3. twelve sentences

The examiner, (with mouth shielded by the mask) presents each section for the subject's immediate imitation.

Sections 1 and 2 - The incorrect responses are noted in phonetic transcription.

Section 3 - The incorrect sentence is transcribed for the analysis of:

1. Meaning present - syntax altered.
2. Word order.
3. Omission.
4. Substitution.
5. Meaning altered.
6. Non-processing strategy - ie. the repetition of the last 1-2 words only.
7. Other.

### Scoring

#### Section 1 and 2 (words and nonsense words)

Each correct response is given 1 point. The maximum possible score for each section is 12 marks.

#### Section 3 (sentences)

The scoring for each sentence repetition response is as follows:

correct (no errors)	score 4
minor syntactic change - meaning retained	3
major syntactic change - meaning retained	2
major syntactic change - meaning lost	1
major disruption/no response	0

Possible score for the sentence repetition section =  $48 \div 4 = 12$

The scoring for the sentence section is based on the view that responses form a continuum from totally correct to incorrect, and that a child who fails to respond correctly may still have derived meaning from the sentence. A binary choice of either correct/incorrect is not thought to be useful. It is important to assess whether information is abstracted even if there is failure to reproduce correct syntactic structure.

Total Score for the 3 sections of the retention subtests in the Auditory section =  $12 + 12 + 12 \div 3$

### Integration

This subtest consists of two stories, which are available in the Appendix. One story is presented at the beginning of the Auditory section and the other at the end. The stories are told, by the examiner, for the subject to immediately re-tell. They have similar semantic level, but differ in syntax complexity.

Story 1 consists of simple sentences.

Story 2 has complex sentences with extended language patterns.

### Administration

The story, told by the examiner (mouth shielded by the mask), is retold by the subject. Each story is then analysed according to the following framework:

- |  |     |
|--|-----|
| 1. Number of propositions involved               | = 9 |
| 2. Location of propositions in correct sequence  | = 9 |
| 3. Grammatical maturity of each proposition      | = 9 |
| 4. Intactness of information in each proposition | = 9 |

### Scoring

Each area of analysis has a possibility of 9 points, as each story contains 9 propositions. Therefore:

- |              |     |
|--------------|-----|
| Propositions | = 9 |
| Location     | = 9 |
| Syntax       | = 9 |
| Intactness   | = 9 |

Possible Total = 36 for each Story.  $36 + 36 = 72 \div 3 = 12$

It is for cosmetic reasons only, that all total scores are reduced to make a maximum of 12 points. This makes it easier to present the data graphically, for the reader.

## Rationale

### Theories of Recognition

Information processing starts with recognition of the input. Auditory recognition is commonly taken to mean the capacity to distinguish between phonemes, or individual sounds used in speech. The Assessment, therefore begins with phoneme/sound matching tasks.

Each phoneme, however, differs from every other phoneme or sound of the language. Some speech sounds, though, are very much like others. That is, they sound very much alike to the listener. Other sounds have many characteristics that set them apart and make them sound quite unlike to the listener. Consider the sound of the two words: seek and beak. Although they differ in only a single phoneme, they are rarely confused as they are distinguished by the wide phonetic dissimilarity between initial s and b sounds. Now consider another pair of words: wreath and reef. These words may be confused because of the phonetic similarity between the final phonemes th and f.

The ability to discriminate sounds develops rapidly in some children, but more slowly in others. It is generally fully developed by eight years of age. (Wepman 1960) The ability should not be confused with the ability to obtain meaning from words we hear. Meaning is most often conveyed through the total context, words, phrases or sentences.

These Auditory processes develop sequentially on at least three levels. First to develop is acuity. This is the ability of the ear to collect sounds from the environment and transmit them to the nervous system. Second is understanding; the ability to extract and interpret meaning from the patterns transmitted to it, in this instance originating orally. The next to develop is the level of discrimination and retention; the abilities that permit the individual to differentiate each sound from every other one and to hold each in mind well enough and long enough to make accurate comparisons. (Bangs 1956)

It is just such ability that we are aiming to assess in the first two sections of sound and syllable matching in the Auditory sub-test. Memory, however, is given low loading, with only two stimuli for comparison.

Many researchers comment on recognition ability and its importance to language development. (Strauss and Lehtinen 1947, Bateman 1968/9, Rubin, 1986, McCleod 1975, Zigmond 1969). Rosenthal (1972) reports that language disordered children had more difficulty discriminating speech sounds that are different because of temporal cues such as /s/ and /t/ than between those that are different because of frequency cues such as /s/ and /ʃ/. Researchers (Hirsh 1959, and Edwards 1973) note problems in discrimination with regard to order in such pairs as: boots - boost, mitts - mist, axe - ask etc. In such cases the listener must distinguish one from the other member of a pair primarily on the basis of the order in which the last two sounds occur. In the case of mitts and mist we have, perhaps, the clearest example because the tongue is in approximately the same position for /s/ as it is for /t/ and one would assume that the spectra would be similar. These two speech sounds are distinguished from each other primarily on the basis of transition duration. In distinguishing, however, between the two words, the listener must not only be able to discriminate the two sounds themselves, but further must be able to perceive their order of occurrence.

Temporal intervals as large as 15 - 20 m.sec. are needed for this perception, suggesting that order judgements require more central mechanisms than those associated with the peripheral Auditory system. The studies of Tallal and Piercy (1973ab, 1974/5/6) demonstrate gross deficits in rapid auditory processing by children with language difficulty, again supporting the idea of more central system involvement.

This research, therefore, indicates the importance of temporal, frequency and order cues in sound processing, and the Assessment Battery



under discussion, has attempted to provide tasks that cover these dimensions. ( see the lists in the Appendix )

It is, however, insufficient to consider sound processing alone. It is rhythm, stress, intonation, pitch and pausing which provide the reference points to which words can be attached. The last two subtests of the recognition section, therefore, include intonation and rhythm sequences involving matching tasks.

Although speech is a sequence of elements, which are interdependent, the relationships between these are not of equal force. There has to be a 'superordinate' process to give meaning and organisation to the separate elements. As applied to language such a view calls for the use of transformational devices allowing for reordering and interruption of surface structure features. (Neisser 1967)

For example: The girl, who was in the front row, was chosen to take the message. The words girl, take, message, form the basic subject, verb, object code and are given the greatest stress, because they are the important content words of the sequence. It is the rhythmic underpinning of stress on important elements/words and pitch movements that bring out the significance of word groups and relate them together.

Martin (1972), presents a strong case for the conceptualisation of rhythm as hierarchically structured units. He believes it is a popular misconception to believe rhythms imply periodic behaviour. They are, in fact, hierarchical in organisation. Such a view has implication for spoken language and analysis of the perceptual process. Such an ability would allow input sounds to be temporarily patterned and the perception of initial elements in the pattern would allow later occurring elements to be anticipated. Kracke (1973), likens this to a Gestalt strategy, where patterns are perceived without concentration on individual elements.

Children poor in acquiring language skills, therefore, may not have the required rhythm hierarchies to code sequential position and perceive, analyse, organise and develop language structure to

functionally competent levels.(Kracke 1975) Whether such deficits stem from basic rhythmic impairments or inability to deal with hierarchically ordered material is not clear.

Rhythm, however, is fundamental to comprehension and production of language, and for this reason is considered an important aspect for assessment.

(Local,1990:Newcastle University:In Press)

All modern theories of perception (Haggard 1971) link the perception of speech sounds onto the rhythmic pattern contours and see the basic unit of perception as the syntasma (phoneme clause), which is a stretch of speech sound of several syllables with one syllable stressed. At the level of grammatical structures, it could be hypothesied that these stressed syllables coincide with the content words, which appear as critical features in processing meaning.

Recognition is, thus, a complex task involving abilities to discriminate sound, pitch, rhythm and time stress. It is necessary to ascertain whether all these components are intact in the system, and, therefore, these subtests include these elements for consideration.

### Theories of Association

The ability to see relationships, similarities and connections between things is the basis of much human thinking, language and higher level learning involving abstraction.

This process normally develops alongside language so that talking and thinking grow together.

Objects, situations and events vary in many different ways and the child needs to group together things which are similar in some way so that he can think about the idea which connects them.

Association, thus, covers a wide field, but is important in linking incoming stimuli to already acquired knowledge. This involves, therefore, the ability to form new relationships. For example: grass is green

In imitation, we depend on being able to analyse phonetically/semantically a rapid auditory memory trace, which fades rather quickly. Only the very vaguest impression of what was there is gained by those who have problems in processing the acoustic stream. According to Olson (1973), memory span may reflect a child's ability to handle verbal information and may not be a measure of processing capacity. Memory, therefore, reflects one's knowledge of the signal. Knowledge of the signal, however, is dependent on the ability to pick out the distinctive features of the acoustic stream and is directly dependent on perceptual strategies. (Watkins & Watkins, 1980)

A number of studies have labelled physical imitation as a prerequisite to language development (Moore & Meltzoff, 1978; Rees, 1975; Snyder, 1978) showing an ability to internally represent the behaviour of others.

Hagen, Hargrave, and Ross (1970), suggest that incoming information is processed at a number of levels and the degree of retention depends on the depth of analysis received. Young children are unable to construct an organisational scheme that will aid recall, and strategies of rehearsal and chunking are age related. The emphasis is on the fact that children do not have the skills to mediate or facilitate recall and that deliberate memorization only gradually emerges from cognitive encounters with external stimuli, which includes but goes beyond perceptual contact.

Huttenlocher and Burke (1976) have suggested that the developmental increase in the span of recall is associated with the speed with which subjects can identify incoming items, and not with increased storage capacity. This may merely reflect increasingly secure knowledge of the signal. Certainly many research reports indicate that children with language problems present poor auditory recall of sequential information. (Maseland and Case 1968, Menyuk 1964, Stark, Poppen and May 1967, Das et al. 1979; Winters & Semcuk, 1986; Merrill & Mar, 1987)

Recent research reported by Stanton (1976), emphasises the strong effect of short term memory in comprehension, so that it seems imperative to devise assessments that require information beyond immediate capacity, so that it is possible to study mnemonic strategies involved. (Owens, 1989)

This has been attempted using elicited imitation, which has become well established as a method of data collection during the past fifteen

years. (Menyuk 1964, and Slobin et al 1968) The assumption is that in order to reproduce a sentence accurately that is beyond a child's immediate short term memory capacity, the child will have to process the sentence (syntax, semantics etc.). Naturally there may not be correspondence between the adult linguistic rules which produced the sentence, and the state of development of the child's grammar. Thus the child's processing of the sentence will be different from that of the processing of the sentence by someone sharing the same linguistic conventions as the producer of the sentence. It is believed that the child's reply, in this case, reflects the nature of his/her linguistic system, and that there is a systematic pattern to the changes which might occur from the subject to the response sentence.

Below a certain length (either in words, morphemes) and level of derivational complexity, a sentence may be expected to be within the auditory short term memory span of the child, and yield no useful data. Similarly, a sentence too far beyond a child's analytic and/or short term memory capacity may be expected to produce an unprocessed response reflecting only phenomena of recency, high frequency word etc. familiar in unstructured (ie. random, nongrammatical) word string recall.

The present test seeks to assess children between the ages of 4 - 8 years. To cover the range of language capacity between these C.A.'s would clearly necessitate an unwieldy number of sentences which would render the test quite impractical. For this reason, there are included for this subsection four (initially) lists of 12 sentences, each list to be utilised with a particular chronological age group. Within each list an increase in syntactic and/or semantic complexity between 1 - 12 has been attempted.

The choice of structures has been determined by consultation of data on order, age of acquisition of particular features of syntax morphology etc. by children, both from studies based on naturalistic evidence and experimental findings. (Brown and Hanlon 1970, Beilin et al 1975)

From these studies it has been taken that a reasonable base syntactic structure is the simple, active, affirmative declarative (SAAD) sentence. Given this, there are, at least, two ways in which it might be made more difficult to process in an immediate elicited imitation task.

The first, might be retention of the syntactic structure, but increase in the number of morphemes, eg:

noun - sing + verb - pres    -    noun - plural + verb - past: or -

noun - plural + verb - simple pres + noun sing (ie. Subject/Verb/Object)etc.

It has been demonstrated (Miller 1975), that morpheme count is more significant than syllable count, and so the former is the factor controlled in the sentence used.

The second dimension for increasing complexity might be variation of syntactic structure. In the preliminary devising of lists, the tentative assumption has been that the more operations that need to be applied to the basic SAAD sentence to derive the next structure, the more complex will be the resultant sentence. Hence, derivation of a yes/no question structure from the SAAD sentence: 'The doll is eating', which involves transposition only of the auxillary to the initial position, may be considered to produce a less complex derivation than a wh-question transformation, which requires transposition of the auxillary plus addition of the wh-question marker, or less complex than a tag question transformation.

As stated, this procedure produces only a tentatively graded list, and it is not being claimed that a sentence involving five 'steps' from the SAAD structure is definitely more complex than one applying only four. Thus, pilot studies were required to establish from performance data the rank order of sentences within one list.

It is doubtful whether one can truly separate out syntactic and semantic factors: there must always be a degree of interaction. However, it does appear reasonable to attempt to construct stimulus sentences where one factor is minimised, the other maximised for supposed complexity



and on this basis sentences have been included which seek to 'test' semantic processing status. In this connection various classes of verb have been contrasted (eg. John helped Bill to leave, versus John promised Bill to leave, versus John told Bill to leave), where surface syntactic structure is maintained, but semantic relations varied: polar adjectives contrasted etc., definite versus indefinite versus demonstrative etc, noun phrase determiners.

The three parts of the Auditory Retention subtests, therefore, include a range of memory tasks. There is a section for nonsense words, to study short term memory and sound accuracy. As a basis for comparison, single meaningful words are included in another section, to look at the semantic effect in a short term memory task. This is further developed in the last section composed of sentence repetition tasks, which demand the processing of syntax and semantics.

Research indicates that elicited imitation is a useful tool for assessing language processing. It gives the opportunity to study the strategies a subject employs, and produces economical data that could be useful in making assessment of speech and language status. The method is standard and allows across group comparisons.

#### Theories of Integration

The last task of the Auditory Assessment involves a story retelling assignment and encourages a productive performance to study language reporting use.

An integrated task involves all the language skills of recognition, retention, association and complex organisation. A story requires the ability to put together details into a meaningful whole. Expressing speech sounds, executing the linear scheme of a sentence and remembering words for the purpose of speaking are the overt processes involved. There are, however, at least two types of covert patterning - linguistic and cognitive. Children transform the story into their own words, reflecting their level of syntactic and vocabulary development.

(linguistic patterning). In addition, they selectively recall features of the original story and impose their own organisation on them, (cognitive patterning). The story retelling task does not directly involve short term memory, which is usually thought of as involving a time span of up to twenty seconds. (Baddeley 1977). It involves long term or intermediate memory if one adopts Wickelgren's (1970) definition as that which has a time constant in the range from two minutes to several hours.

If short term memory is found to be deficient, it is interesting to observe if this can be by-passed in a story reproduction task.

When considering the assessment of this area, a word of caution is needed in interpreting responses. Sabatino (1969) developed a test of auditory perception, measuring discrimination of words and speech sounds and recall of digits and sentences. It was concluded by Rees (1973) that it was difficult to know if the tasks that measured perceptual function were actually a test of the children's knowledge of language. This factor remains problematic, because it is impossible to assess a child in a raw state with no previous language input.

The research of Hagan (1970) and Stanton (1976) emphasises the (Faris & Lindauer, 1976; Schmidt et al, 1984; Roth, 1987) necessity of acquiring active cognitive strategies for the successful processing of information, and the battery of assessments has been devised with this particular aim in mind.

Interest, therefore, is not primarily in ~~memory~~ data, but in data that allows the observer to produce a framework that will allow the study of a subject's learning strategies.

Studies by Das et al (1979), Jarman (1978), Jarman & Das (1977), Lincoln et al (1985), Merrill & Mar (1987), and Shafer & Peeke (1982) showed marked differences in performance of LD and N population on tasks of auditory processing.

## VISUAL AREA

### Introduction

Language depends on making links between words/gestures and objects, people, activities, events and situations in the daily environment. Linking what is heard to what is seen is important, first in three dimensional situations of everyday life and later in two dimensional contexts involving pictures, words and numbers. The ability to recognise visual stimuli, link them to other experiences, remember their sequences and orientation and integrate them into meaningful situations is vital for learning.

The first section of this assessment area concentrates, therefore, on receptive skills - the ability to understand and interpret what is seen, and the ability to comprehend the meaning of symbols, written words and pictures.

Obviously the ability to retain such symbols, and code their sequence and orientation is essential for any secondary language activities such as reading and writing. The visual retention subtests, therefore, score for both these aspects and include non-symbolic and symbolic stimuli for the examiner to observe any possible differences in performance by the subject.

Much of school experience involves linking visual experiences involving events in pictures and writing. Does the child, for instance, recognise that a glove he is viewing goes on the hand ? Does he recognise that a ball and bat can be in the same category as a tennis ball and racquet ? Unless this ability is well established it will be difficult to abstract central meaning from an integrated visual context, such as a picture of home or school. Clinically, one is familiar with the child who cannot achieve this, as presentation of a picture merely

brings forth a labelling reponse of the various items seen in the picture context. There is no attempt to gather together this information in the mind and understand the overall meaning that the picture conveys. This ability is vitally important and underpins language for explaining, reporting detail, predicting (from the present context), hypothesising and expressing feeling. It requires the ability to associate the present context with previously remembered experience. Logic and problem solving skills are involved as well as matching auditory and visual images.

These are the abilities tapped in the Association Tests, requiring the subject to repond to various visual relationships that depend on a grasp of the underlying attributes that form the categories of same and different.

The Integration Tests bring together the skills of recognition, association, and retention in a complex picture activity, which demands a grasp of the central meaning that is visually expressed.

Visual processing is, therefore, important to the development of language abstract concepts particularly those involving time and space. It is vital to the understanding of the world we all live in, think about and talk about.

The Assessment materials , in this section, are based on the visual experiences that are part of school and daily life. These are pictures, numbers, letters, words, shapes and forms.

#### Description of Tests

#### Discussion of Stimuli

#### Pictorial Materials

For this section, consultation was made with Bernherd Klinger - Psychologist at the Institute of Child Psychology and Psychiatry, at the University of Tübingen, in Germany. He had researched into picture selection when compiling Language Assessment materials for children with language disturbances.

Findings suggested that pictures using bold outlines with maximum colour contrast, (eg. black/white) between outline and background were most efficient.(Klinger 1974). Photographs were to be discouraged because of their shadowy blurred outline. Pictures using more than four colours prove distracting. Klinger made the point that children with language disorder tended to be confused when confronted with a picture of a green apple, if they were only used to eating ones that were red.

Presentation of pictures seemed to be important. Some objects were more easily recognised when presented slightly angled from above. My own pre-pilot runs, with pictures, confirmed this with objects such as book, chair and key.

As a result of reading Klinger's work, I made contact with him, and he was interested enough to come over to England for a week and observe some of the pilot runs with pictures carried out on children 4 - 8 years, in School and Play group settings.

Following these pilot runs, pictures were used of just black and white outline and features presented in what seemed the usual way in books and pictures used with young children. Only pictures of common reference were sought.

After discussions with Klinger and an Orthoptist, at Rugby Hospital, the pictures and forms for the Recognition and Association Tests were produced in linear format, rather than in random fashion on a page. This would enable observations to be made regarding eye movements and fixation strategies. It was felt that this would be an important factor in ascertaining how children dealt with a complex visual array.

In the Recognition and Association Tests, tasks were presented in book form, with each item on a different page. The Retention tasks were also presented in a book, with additional small individual pictures of



symbols, which, when the book was removed after scanning, had to be reproduced in the same sequence and orientation as the original stimuli. Separate pictures and picture strips were involved in the Integration Tasks.

### Procedure

#### Recognition

A picture matching task of 12 items is used. There are 4 colour matching tasks. (Colour coding procedures are often used in treatment techniques for dysphasia/dyspraxia/dyslexia.) Matching of forms, individual letters and numbers, and letter and number sequences is tested. Items are chosen that present a confusability in direction and orientation (eg. p,b,d,q ). This knowledge is important if using visual symbols in teaching or treatment schedules.

#### Administration

The subject is presented with a book, with each task on a different page. An item in a left hand box is pointed out by the examiner and the subject is asked to point to a selected picture (from a choice of four) that is the same, from the right side of the page.

#### Scoring

There are 12 items to this subtest, each scoring 1 point = a possible total of 12. The score sheet is shown in the Appendix.

The example (before the 12 items) is, of course, not scored.

#### Association

This area deals with visual relationships. There are 4 items in three different sections of the subtest. Each section is preceded by two examples.

#### Section 1

##### Odd in sequence

The subject is expected to select the odd item in a sequence of four.

example - pictures of: plate, glass, cup, mug.

Stimulus Cue - Which one does not belong ? ( correct reponse - plate).

Similar in Sequence

The subject is shown a picture of an object in a boxed area and asked to find one like it from four possible stimuli items.

Stimulus Cue - Look (point to the one in the left box) and find one like it.

Pair in Sequence

The subject is shown a picture of an object in a boxed area and asked to find one that goes with it from a stimuli presentation of four pictures.

Stimulus Cue - Look, (point to the one in the left box). What goes with this ?

The pictures, as already discussed are in linear form, so that the examiner may observe visual strategies in scanning the material, which may have consequence for reading.

example: watch for left to right eye movements or for a haphazard pattern of gaze directed to the page.

Scoring

Each item scores one point. The total maximum = 12.

Retention

In this section the child is presented with a sequence of two and later three symbols on a page in a book format. The items are pictorial,

non - symbolic (ie. having no obvious verbal label), numbers and letters.

All stimuli have the possibility of more than one orientation or position in space. The subject is able to scan the display for five seconds before removal. In front of the child, on the table is a confusing group of four to six symbols. The right number, sequence and orientation have to be selected to recall accurately the original display.

but sugar is \_\_\_\_\_ (white/brown). The connecting idea, here, is colour, which involves knowing the word/colour links and the knowledge that certain objects have a stable colour relationship. The associations depend on making the right cognitive and linguistic links. Thus, association is the base for reasoning, critical thinking and problem solving. It is the area between reception and expression, and is obviously crucial in the information processing change. (Harris, 1982; MacMillan, 1972; Spitz, 1966)

Behavioural psychologists (eg. Skinner 1953) have tended to disregard its activity focussing instead on the stimulus and response.

Cognitive psychologists ( eg. Piaget 1960) recognise and differentiate a central processing area, but find it difficult to describe its activities. Remedial specialists ( Bush and Giles 1977 ) recognise the importance of finding more precise data regarding this area of function. The Auditory subtests, therefore, involve the supply of responses extending throughout the range of word forms.(eg. adjectives, nouns, verbs, prepositions, adverbs, conjunctions). Linguistic and cognitive information is, therefore supplied.

### Theories of Retention

The ability to link ideas and words (association) involves the retention of stimuli, in order to organise them appropriately. Some children have difficulty remembering what is heard long enough to repeat it immediately. Repeating meaningful sentences is easier than repeating such non meaningful sounds as digits, random words, or nonsense syllables. The sequences of words in a sentence are motivated by the semantic relationship between them. Three year old children, who can only repeat a list of 2/3 unrelated words are able to produce and comprehend quite long sentences because of the semantic relationships cued by the words in sequence with one another. A pilot run, to try out materials with pre-school children, in Leicestershire, established that sentences were very much easier to reproduce than unrelated word lists.(Sage 1977)

### Administration

Stimulus Cue - We're going to look at some pictures. We have two fish (place on the table), one going one way (indicate) and one going the other (indicate). We also have two jugs (place on the table) one going one way (indicate) and one going the other (indicate). I'm going to show you a picture with these on. You've got to pick out the right cards to make a picture like mine, in the right order, and each picture the right way round. (show the practice card). We have got to do some more, but this time you have to remember them. I'm going to show you the picture ( 5 seconds) and then take it away. Can you make one like it? The child proceeds through two practice items as examples, and then follows on with the twelve test displays.

### Scoring

Each response scores: 1 point for correct sequence, and 1 point for correct orientation. The possible total = 24 divided by 2 = a total out of 12.

### Integration

There are three activities in this section, involving a complex task with visual materials. (ie. pictures/picture strips).

#### 1. Sorting

Two visually presented situations are presented to the child. These are:

1.A bathroom scene

2.A meal table

The subject is presented with an array of eight cards and has to sort them into correct situations. eg. fork - meal table; soap - bathroom.

There is a total of 8 points. 4 for each situation. 1 for each card correctly sorted. The task is preceded by two practice items.

#### 2. Story Sequence

The subject is presented with a jumbled picture sequence to sort and

place in the right order. There are four pictures. The example story picture strip is writing a letter and the sequence for scoring is having a bath. There is only one possible sequence, and no alternatives, to prevent ambiguity. In the test item there is 1 point for each correct card place in the sequence. Total = 4

### 3. Complex Picture

Pictures to simulate different real - life situations are very much part of the Therapist/Teacher's tools of the trade, used to stimulate language. Recognition and retention of detail in a visually integrated set-up are necessary skills to generate verbal percepts/concepts

#### Tasks ( Recognition and Retention )

##### Materials

A large picture ( A4 size ) of a house/garden/street scene.

2 sets of picture strips, containing 4 small pictures in one strip.

##### Recognition Task

The subject is presented with the large picture, and seven picture strips of four small pictures. One strip is used as an example, and so is not scored. The picture strip presents the same item (eg. door), but each small picture is detailed differently. The child is asked to select, from the four picture strip, the one he sees on the large picture. One point is scored for each correct response. Possible maximum total = 6.

##### Retention Task

The subject is asked to look at the large picture for 30 seconds before it is removed. Seven picture strips of four small pictures of the same item detailed differently, are presented individually to the child. One of these is a practice item. The child is asked to indicate which picture (of the possible four) is the correct one depicted in the large one. There are six test items, each scoring 1 point for a correct response. The maximum possible score = 12.

##### Scoring



### Totals

Section 1 = 8;    Section 2 = 4;    Section 3 = 6 (Recognition) +  
6 (retention) = 12. The possible total = 24, divided by 2 = 12.

### Rationale

The visual channel, as it relates to learning, includes the active processes of receiving, integrating, interpreting and retrieving visual stimuli. When the activity of looking becomes integrated with the sensation of seeing, visual perception takes place. (What do we see when we look ?)

Visual perception is involved in nearly everything/action that we take and is vital in learning verbal concepts, reading, writing, spelling, calculations and many other skills.

Frostig (1967) focuses on five abilities:

1. Visual motor co-ordination - the ability to co-ordinate vision with movements of the body.
2. Figure ground perception - the ability to select from a mass of stimuli.
3. Perceptual constancy - the ability to perceive that an object possesses unchanging properties.
4. Position in space - defined as the perception of the relationship in space of an object to the observer.
5. Spatial relationship - the ability to perceive the position of two or more objects both in relation to self and each other.

As with Audition, there appears to be developmental patterning in Visual perception. Some scientists believe that the ability for gross segregation of the figure from its background is present at birth, but perception of form requires a fairly extensive period of learning. Bangs ( 1956). Children may be expected, therefore, to discriminate between an angular and oval object, before making a finer discrimination

between circles and ovals. Children below six years have greater difficulty with discrimination of mirror images than upside down figures (Gibsons 1962). In reading readiness tests, they will recognise the one which is different if it is upside down, but may fail if the figure faces to the left when all others face right. The Gibsons (1969) cite spatial orientation as an important aspect of perceptual organisation which initially is irrelevant, at first, because the child will see parents, objects and toys in a wide variety of orientations over time. To record information, therefore, about orientation on one occasion will not help recognition on another. When the child starts School, however, and learns to read spatial orientation becomes highly relevant because it is essential for distinguishing letters of the alphabet. Many letters and numbers have the same structure and form, but differ in spatial orientation which alters their meaning value:  
eg: M W, N Z, p b d q, n u, l j, h y, 6 9 etc.

The evidence for this theory is an experiment (Gibson, Gibson, Pick and Osner (1962) ), in which children four to eight years had to match a standard outline figure to a series of choice figures, some of which were identical to the standard and others varying along one dimension or another, including orientation. The major age differences were in orientation errors. The older children made few errors.

Although the evidence supports the theory, the theory is strange. When a child has to recognise a toy, it may not help to remember orientation of previous encounters. This is a question about memory, rather than perception. On the other hand, for immediate behaviour orientation is relevant and essential, - picking up toys, building bricks - are just two examples of activities not possible unless the child takes in orientation of the objects involved. If cognitive selection occurs, therefore, it is much more likely to be selection

of what to remember than what to perceive. The experimental array in the Gibson experiment was so complex and involved so many choices of stimuli that memory as well as perception was involved.

More recent experiments using simple displays (Over and Over 1967), Bryant (1969), show that children can distinguish orientation well, but younger ones remember orientations less effectively. Young children appear, therefore, to treat orientation as relevant to their immediate behaviour and irrelevant to future needs. Bryant's (1969) study shows, that the child's memory for orientation is quite specific. They remember horizontal, vertical and oblique lines when these have to be compared successively to other obliques. This is explained by the fact that young children adopt a binary match - mismatch code in orientation and position comparisons, which tells them whether lines parallel each other or not and whether objects are in line with others or not. This code solves some discriminations and not others and as such would not help the child who has to learn to read.

Such results, as quoted, suggest that perceptual development within a modality, and even within a dimension will involve changes from one code to another. Only through maturation, therefore, and hundreds of trials and errors does direction and distance become meaningful.

There is a general type of developmental sequence related to the acquisition of spatial concepts and their word symbols. Children learn the meaning of 'in', 'on' and 'under' before discriminating right and left. The developmental concepts related to space and word symbols for these concepts appear to be closely associated with written language acquisition. Reading and writing are, of course, dependent on concepts of top, bottom, left and right.

Varying degrees of impairment of the visual system may effect discriminatory processes. The child with limited or no peripheral

vision may fail to match large pictures because he does not see the outer portions of the picture, where differences appear. The eye may be damaged or its pathway to the cortex be disordered. As a result a child may not be able to discriminate the parts of a whole or spatial relationships. As with Audition, visual perceptual disorders may relate to past experience, previous set, physiological experiences during the discriminatory process, condition of the visual pathways and the nature of the message. Disorders are not easily identified. For example, a nine year old child can look at a drawing of a square and name it, but be unable to copy it accurately. Does he draw it as he perceives it ? Does he have an accurate visual image and lack the ability to convert such an image into motor skill ?

There is a need, however, to obtain data regarding visual perceptual processes for the purposes of remediating language learning disorder. Brown(1974), Fagan(1968) and Mosley(1980,1981) have found significantly different results with normals v retardates on visual tests of discrimination and memory. The Assessment, under discussion, aims to collect data from the identification of recognition, association, retention and integration processes. Roth(1987) points out there is much to learn about these aspects.

Language is dependent on the ability to process and integrate information from all sense channels. From the point of view of assessment of learning problems it is necessary to separate out visual, auditory and haptic processing to understand fully a child's needs and arrange a context to suit the individual's processing strategies. Studies by Harter et al(1971), Libkuman(1972) and Richman et al(1978) have noted differences in performance when comparing normals with learning disabled populations.

This particular Assessment battery aims:

1. To provide information about a single channel's processing status.
2. To provide a situation that will enable useful observation of learning strategies employed by a child.
3. To provide information about materials and activities that might cause difficulty in a learning context.

H. A. V. INVENTORY CONTENTS LISTHAPTIC

18 Plastic Shapes and 1 Mask

BOOK 1HAPTIC MOVEMENT

Diagram of Plastic Shapes used for Haptic Oral and Manual Tasks  
Haptic Record Sheet

AUDITORY

Auditory Recording Sheets

Auditory Recognition

Auditory Association

Auditory Retention

Group 1 Words/Nonsense Words/Sentences

Group 2 Words/Nonsense Words/Sentences

Group 3 Words/Nonsense Words/Sentences

Group 4 Words/Nonsense Words/Sentences

Sentence Imitation Analysis

One Buzzer

VISUALBOOK 2VISUAL RECOGNITION/ASSOCIATIONBOOK 3VISUAL RETENTION/INTEGRATION

Visual Integration Picture

Visual Analysis

Summary Sheet



## CHAPTER 5

### THE HAPTIC, AUDITORY AND VISUAL ANALYSIS

This Chapter considers a Study of 40 normal children and 40 children labelled as language disordered, after Speech Therapy Assessment.

The H.A.V. Inventory is used on both groups and the data collected analysed for comparison. The Study is described as follows:-

1. Methodology. This outlines the sample selection, administration and scoring procedure as well as other measures used.
2. Sample Characteristics of the two groups on other measures.
3. Test - Retest Reliability. The purpose of this is to gain a measure of the consistency of the materials used.
4. Validity. This assesses whether the materials validate the model of separate skills in an information processing approach.
5. Main Results and Discussion. This looks at the similarities and differences between groups using quantitative and qualitative data.

### METHODOLOGY

#### Sample

Two groups of 40 children were selected for the Assessment on the H.A.V. Inventory. 40 children were described as normal by their Schools and Playgroups. The criteria for the 'label' normal were no known physical, mental or emotional problem or handicap.

A random selection was made from appropriate age groups. Names were drawn from a hat and school and medical records checked to confirm 'normal' status.

The other 40 children were those with a diagnosis of language disorder, resulting from referral and Assessment by the Speech Therapy Service.

The normal group was chosen from 3 schools and 2 playgroups in Leicestershire, and a preschool group in Northamptonshire. Two schools were in towns and one in a rural area. The playgroups were distributed in the same way.

The language disordered group came from 2 sources. Half this sample (20 children) were from 2 Units for children with language disorder in Leicestershire and Warwickshire. These units were attached to mainstream Primary Schools. The remaining 20 children were referred to me for psycholinguistic testing, on the basis that progress from treatment/teaching in Clinic and School was not satisfactory.

#### Criteria for Sample

The groups were matched for age, environment and socio-economic level, as well as non-verbal I.Q.

#### Age

In each group of 40, there were 4 sub-groups of 10 children in the following age ranges.

Age (years)	Normal    Lang.D	
4-5	1	1a
5-6	2	2a
6-7	3	3a
7-8	4	4a

It was not possible to match child for child in each age group. The mean age for each group shows the level of matching achieved. This mean level was identical for groups 1 and 1a. The only significant difference, in a statistical sense, is between groups 3 and 3a ( $p < 0.02$ ). Table 5.1, below, tabulates this. The difference is not too important in this context. It was not possible to randomly select the language disordered group in the same way as the normals because there was less sample choice available. It was, therefore, impossible to match this variable with greater accuracy.

Table 5.1. Comparison of Mean Ages (in months) between Normals(N) and Language Disordered(D).

		4 - 5 yr		5 - 6 yr		6 - 7 yr		7 - 8 yr		Total	
		1	1a	2	2a	3	3a	4	4a	N	L.D.
Mean Age		55.20	55.20	66.50	66.60	76.90	75.60	89.10	87.90	73.07	71.33
S.D.		4.34	4.19	2.67	2.91	2.26	3.60	2.11	4.04	13.23	12.66
t		0.00		1.52		2.45		1.25		0.60	
p		1.00		0.14		0.02		0.22		0.54	

#### Environment

In each group of 40 children, 30 came from town and 10 from country settings.

#### Socio-economic Level

The use of Father's occupation, to determine social class, was based on the Registrar General's Classification of Occupations, modified to match that in use by Speech Therapy Services, in Britain, since 1979. This follows the Newson's (1966) sampling procedure. Class 1 and 2 are combined into one class, for analysis, whilst class 3 is divided into two - 3 (white collar - W.C.) and 3 (Manual - M.).

This separates the white collar and supervisory manual occupations from the skilled manual ones. The occupations are graded according to the most recent edition of the Registrar General's Classification. Class 4 is ambiguous, including workers in heavy manual jobs, such as stokers and foundry workers, and those in semi-clerical jobs like mail-sorters.

It was initially decided to use discretion to upgrade the family status on the basis of Mother's occupation, if she had a higher grading than Father. In practice, for this Study, it did not become necessary to do so. Income was not taken into account.

Each of the two samples contained 35% Class 1,2, and 3 (W.C.) and 65% Class 3 (M), 4 and 5. (see table 5.2 below). This was rather different from the Newson's (1966) Class composition of a random sample of 27% Class 1, 2 and 3 (W.C.) and 73% Class 3 (M), 4 and 5. The Newson sample, however, was within the urban community of Nottingham, whereas this sample included rural and urban areas of Leicestershire/Northamptonshire/Warwickshire. Leicester has traditionally been ranked as the richest city in England, and, therefore, may attract a different socio-economic level to the norm.

Table 5.2. Social Class Sample Composition of 8 Groups of 10 children 4-8yr.

	1	1a	2	2a	3	3a	4	4a	Totals Groups 1-4	Totals Groups 1a-4a	Totals %
Class Groups	1,2	2	1	1	2	1	0	1	4	5	35%
	3(WC)	2	3	3	2	3	2	1	10	9	
	3(M)	2	2	2	3	2	0	3	9	8	65%
	4	3	2	2	0	1	3	2	8	9	
	5	1	2	2	3	3	3	1	9	9	

#### Non-Verbal I.Q.

It was decided to impose some standard procedure to match non-verbal ability for the two main groups. The Raven's Coloured Progressive Matrices Sets A, Ab, B revised order (1965) were chosen. Although there were some doubts concerning reliability expressed by Raven, the Author, Freyburg (1966) puts forward a claim for a higher degree of reliability when administered in group rather than individual testing sessions. (stability 0.89, 0.87, 0.76).

In this Study, the procedures were used on an individual basis. I have used the test extensively in Clinical situations and have found it useful in providing information regarding the cognitive development of young children and successful in differentiating between children of higher,

average and low general ability. The stimuli presentation is non-symbolic and, therefore, is a useful contrast to verbal symbolic Assessment.

The test is clinically practical, as it is easy to administer and needs little verbal explanation. In a Pilot Study on 20 children, preceding the present Study, the Matrices' scores correlated with teacher ratings at a 0.84 level.

Again, on this dimension of non-verbal ability, it was not possible to match child for child. In each main sub-group, the mean scores of the group were used for comparisons (Table 5.3)

Table 5.3. Comparisons between Normals(N) and Language Disordered(L.D.) children on Raven's Progressive Matrices.

		Groups								Totals	
		1	1a	2	2a	3	3a	4	4a	N	LD
Scores	Mean Score	11.70	13.50	15.90	14.00	18.30	16.00	21.10	17.20	16.75	15.17
	S.D.	1.83	3.95	2.08	1.49	1.70	2.63	3.93	1.93	0.67	0.47
	t	1.31		2.35		2.32		2.82		1.91	
	p	NS		0.03		0.03		0.01		NS	

NS = 0.05 +

Other than Group 1, there was a significant difference between Groups 2,3 and 4, but the total of Groups 1-4(N) compared with the total of Groups 1-4(L.D.) indicates that the overall difference is not significant. It is interesting to note that it became very difficult to match groups at the 7-8 year stage for non-verbal ability. Whether this indicates decreasing ability, a slowing up of progress, ineffective teaching methods or any other reason, is a matter of pure speculation at this stage.



### Constraints operating on Set Criteria

#### 1. Home background and Environment

These warrant special considerations, as such influences may cut across class or socio-economic divisions. It was, therefore, decided to exclude the following:-

- a) Children not in the care of their own Mothers.
- b) Illegitimate children, or children not legitimised before their first birthday.
- c) Immigrant families, unless in England for ten years or more.
- d) Children known to have physical handicaps (including sight and hearing problems) or mental handicaps, as diagnosed from pre-school screening procedures of Health Visitors and Doctors.

There were no children from a bi-lingual background. English was the first and only language spoken in all houses.

#### 2. Schools/Playgroups

These contain a large number of influences/variables affecting children's development - eg. type of organisation - (grouping systems by age - (horizontal) or across age group (vertical)), population, catchment area, accommodation offered, staff/pupil ratio, and facilities for special needs etc.

It was obviously not possible to control these in the population studied, but they are potent influences in assessing child performance, and because they are not considered in this Research, must be considered as an important hidden variable in judging child responses.

### Selection

Children meeting the criteria laid down, were randomly selected, as described in the SAMPLE section of this Chapter.

The parents of children taking part in the Study were notified and asked to furnish details of occupations. School and Medical records were checked to ensure criteria were met by the sample.

### Administration

The children were seen on two occasions, in their School/Playgroup settings. The conditions were as follows:-

1. A small quiet room with minimal distractions.
2. The room contained a table, at child height, with two chairs - one for the examiner and one for the child.

The children were briefed, along the following lines; they were told that some games were being tried out amongst a number of children and they had been chosen to play them.

### Scoring Procedures

These are set out in Chapter 4, and are further discussed under the MAIN RESULTS, in this Chapter.

### Session 1

Since none of the normal children had received any Standard Assessment of Language and Non-Verbal Ability, the first Session, for everyone, consisted of administration of two simple tests:-

#### 1. The Renfrew Action Picture Test (R.A.P.T.) (1971)

This is a short screening test of Language, using picture material and graded questions, to elicit responses from a child, and provide data on:-

- a) information given.

- b) language structure used.

This Assessment was chosen because:-

- i) It is a commonly used Test by Speech Therapists.
- ii) In an informal assessment of the validity of this test, comparing 44 children on R.A.P.T. and spontaneous speech samples, analysed by Language Assessment, Remediation and Screening Procedure (L.A.R.S.P.), (Crystal, Fletcher and Garman, 1976), 80% were found to score with the same level on both Assessments.
- iii) The Test is quick and easy to administer.

2. The Raven's Progressive Matrices (R.P.M.) (revised order 1965)

This is a test of non-verbal thinking skills, requiring subjects to select an appropriate pattern piece to complete a stimulus sample.

The Assessment is in 2-dimensional book format. Although this Test does not have normed data for the age group 4-5 years, it was felt to be the most appropriate instrument for reasons already discussed.

3. Teacher Rating

Also, on the first occasion, the Teacher/Playgroup Leader was asked to do a personal rating of each child's observed ability using the following Scale.

Above Aver.		Average			Below Average		
A	A-	B+	B	B-	C+	C	C-
1	2	3	4	5	6	7	8

The Teachers coded in letters, as they were used to this kind of rating procedure with children, but for the purposes of data analysis, the recording was made in numbers. Teachers and Playgroup Leaders were given a copy of the above chart in order to understand the procedure.

Session 2

This Session consisted of administration of the three sections of the H.A.V.

The three sections were completed within one visit, and each section was timed using a watch with minute hands, to allow a break between each main subgroup, (eg. Haptic, Auditory, Visual), if a child demonstrated problems in concentration. This break was not counted within the test timing.

Recording of responses was completed on specially prepared sheets.

These are available in the Appendix.

SAMPLE CHARACTERISTICS OF THE TWO GROUPS ON OTHER MEASURES THAN H.A.V.

Age

There was no overall significant difference between total groups of Normals and Language Disordered children, although a slight significant

difference between Groups 2/2a, 3/3a, 4/4a. This has already been discussed under METHODOLOGY.

Sex

Table 5.4 Male/Female distribution in N. and L.D. Groups

	N	L.D
M	52%	77%
F	48%	23%

The above Table shows the male/female distribution, in both normal and language disordered groups. The normal group reflects population patterns, with a slightly higher number of males in the Sample.

The language disordered group, although not reflecting normal male/female distribution, does show the pattern of referrals to the local Speech Therapy Services involved in the Sample, where females in the years 1978-82 formed between 20-25% of the total numbers of children 0-18 years.

The distribution is typical of many other groups of children, with Special Needs. The latest available D.E.S. Statistics (1982) give the following figures in the 'Speech Defect' category.

Boys	1587	68.25%
girls	715	31.75%

The male/female distribution, in this Study, reflects the trend of the D.E.S. Statistics, with very many more boys having problems with language than is the case with girls.

Although SEX differences are highlighted, as a point of interest, when considering sample characteristics, these are ignored in the MAIN DATA.

### Social Class

Social Class distribution, of both Groups, has already been discussed under METHODOLOGY, when considering the Socio-economic criteria for the Sample. Table 5.2 indicates that the normal group and the language disordered group are comprised, overall, of similar ranges of socio-economic distribution.

### Non-Verbal I.Q.

Non-Verbal I.Q. was measured by the Raven's Progressive Matrices. Table 5.3 compares the results of the two groups. As already discussed, the overall scores are tipped in favour of the language disordered sample in Group 1, but this is reversed in Group 4. As age increased, it became very difficult to match the two groups, on this variable, which leads one to speculate regarding the effect of poor verbal skill levels on non-verbal abilities.

### Teacher Estimates of Ability

A rating of 1-8 was used by Teachers, to rate children's ability, as described in Session 1 Activities. Table 5.5 compares estimates of general ability for the whole of the two groups. Interestingly, the bias is slightly in favour of higher ratings for the language disordered group but the difference is not significant.

Table 5.5 A Comparison between N. and L.D. Groups using Teacher Ratings.

	N	L.D.
Mean	3.57	3.82
SD	1.07	1.02
t	0.03	
P	NS	



## Behavioural Observations between Normal and Language Disordered Groups

In order to gain as much information as possible from the two groups it was decided to carry out the following structured observations.

### 1. Attention Control

It is generally agreed that children with language problems have immature levels of attention control. (Reynell, 1978) Therefore, it seems important to look at this facet closely and in order to do this the Reynell Attention Control Schedule (1978) was administered to both groups. This aims to ascertain true developmental stages in attention control and indicates approximate age levels for each stage. The levels cover the years 0 - 6 and are subjectively rated by the Examiner, from observation of tasks, and coded 1 - 3, according to whether attention is occasional or stable. This schedule is available in the Appendix.

Obviously attention has considerable variability depending on the situation and the nature of the task. Since, however, the tasks for N. and L.D. were standard on the H.A.V. Assessment, it was felt useful to look at the level of attention control achieved by both groups and to use analyses to compare performances.

Three analyses were carried out, and Tables 5.6 a, b, and c show the results.

Table 5.6 a. A Comparison of N. and L.D. on Attention Control Levels (Reynell), for each age group, using the Mann-Whitney U Test.

Comparison	U =	p
1 v 1a	0	< 0.001
2 v 2a	0	< 0.001
3 v 3a	0	< 0.001
4 v 4a	10	< 0.005

In Table 5.5. a. the Mann-Whitney U Test is used to compare normals and language disordered at each attention control level, in all 4 age groups - 1-4, and 1a-4a. There is a significant difference, in all 4 age groups, between N. and L.D.

Table 5.6. b. Comparisons of Age Trends between N. and L.D. using the Jonckheere Trend Tests.

Comparison		
1 v 2 v 3 v 4	$S < 0$	(N.S)
1a v 2a v 3a v 4a	$S = 68$	(N.S)

Table 5.6. b. shows the result of the Jonckheere Trend Test, to see if there was a significant trend for scores to increase with age, over the 4 age groups, in each sample separately. As the results indicate neither was significant. This is obviously due to ceiling effects, and also masks an obvious difference between groups 1a and 2a versus 3a and 4a. These are further revealed by Mann-Whitney U Tests, recorded in Table 5.6. c.

Table 5.6. c. Comparisons of L.D. Groups 1a versus 3a & 4a, and 2a versus 3a & 4a, using Mann-Whitney U Tests.

Comparison	U =	p
1a v 3a	18	$< 0.01$
1a v 4a	6	$< 0.005$
2a v 3a	16.5	$< 0.01$
2a v 4a	6.5	$< 0.005$

There are significant differences shown between 1a v 3a and 4a, and 2a v 3a and 4a. Differences between 1a v 2a and 3a v 4a were not tested, as they are clearly not significant.

Since the attention control levels were subjectively placed by me, for both groups, results must be treated with caution.

There were, however, notable differences in the quality of concentration between N. and L.D., which this data analyses judges as significant within each age band.

## 2. Response Time

The time each child took to complete subtests of the H.A.V. Assessment was recorded in minutes.

Table 5.7. below, shows the mean scores for each age group on the 3 H.A.V. subtests.

Table 5.7 Mean Time Scores on H.A.V. Subtests for each age group of N.& L.D.

	H	A	V
1	21.1	18.0	19.6

2	21.3	18.0	19.1
---	------	------	------

3	18.1	16.7	16.9
---	------	------	------

4	16.4	15.0	15.5
---	------	------	------

N.

	H	A	V
1a	25.9	23.9	26.0

2a	25.3	23.9	22.2
----	------	------	------

3a	24.5	20.6	23.5
----	------	------	------

4a	24.1	19.8	22.9
----	------	------	------

L.D

A 2 Way Analysis of Variance (ANOVA) was used to analyse this data. There are 4 separate ANOVAS, one for each subtest, and one for the total battery. Table 5.8 summarises the data.

Table 5.8 A Comparison of N.and L.D. on an Analysis of Variance for Time of completion of the H.A.V. Assessment.

	Means	F	P	Means	F	P	Means	F	P	Means	F	P
Group	667.01	266.46	0.001	418.61	107.92	0.001	756.45	125.49	0.001	544.99	220.28	0.001
Age	52.25	20.91	0.001	17.01	19.85	0.001	70.10	11.63	0.001	589.75	23.86	0.001
Grp/age	15.01	6.01	0.001	7.01	1.91	0.15	1.15	0.19	0.90	3.83	0.16	0.93

The effects for normals versus language disordered groups, and for age, are significant at a  $p < 0.001$  level for all 4 dependent variables, Haptic, Auditory, Visual and Total Battery. The only interaction effect that is significant is for the Haptic subtest. Looking at the means, this is due to the fact that the improvement in time to complete the Haptic sub-test, in the normal group is clear ( 21.1 minutes down to 16.4 minutes). There is much less improvement in the language disordered group ( 25.9 minutes down to 24 minutes).

The same clear effect is not shown in the Auditory, Visual or Total sub-test figures. The trend is the same, however, in the other test section except for the Visual sub-test, in the language disordered group. Here, the response time does not show such consistent improvement with age. eg. Group 2a's (5-6yr.) mean score is 22.2 minutes, whereas the mean score for Group 3a (6-7yr.) is 23.5, showing that the older group took longer to complete this subtest than the younger group. Overall, however, the language disordered group took 4-8 minutes longer on each sub-test, than did the normal group.

Related to this, is the fact that the language disordered group had much greater problems understanding the nature of the task, either because of poor attention control or inherent problems in processing.

Thirty seven out of a total of 40 language disordered children needed instructions repeated more than once, whereas only five out of forty of the normal group required this.

The language disordered group showed poor ability to alter mental set in tests such as visual association, needing three different approaches in three sub-test areas - odd/similar/pair in sequence. They tended to perseverate responses under these conditions. For example, in section 3 (pair in sequence), the correct response to number 1, is the second picture in the line of four (comb) to go with the stimulus picture (brush). 50% of all 4 language disordered groups pointed to this object picture position (ie. second in the line) for two or more of the following questions.


The normal group showed no problems with changes in mental approach and displayed less rigid thinking strategies.

### 3. Task Strategies

The normal group openly demonstrated their strategies for dealing with a task, whereas the language disordered group displayed no such characteristics. For example, in the oral stereognostic tests, the 'normals'

immediately used their tongue tips to feel round the edges of each object in the mouth. Not one language disordered child did so. There was no evidence of any observable mouth movements in this group.

In the visual retention tasks, Group 2 upwards, in the 40 normal children, used verbal rehearsal to help recall visual symbolic and non-symbolic stimuli. They made up their own labels where no conventional ones existed.

eg.  - rehearsed as 'like an envelope!'

None of the language disordered group attempted to use verbal rehearsal, in any of the 4 age groups.

Visual material was presented in linear form, in order to make subjective study and description of eye movements. Eye scanning movements of the normal group, were even and economic. They immediately fixated on the visual forms and showed a systematic scanning strategy. Scores on visual memory, of course, show a superior ability to retain visual images which would speed up effective visual processing. The language disordered group showed little evidence of systematic visual strategies. Eyes would wander over the page with no established left→right scanning pattern noticeably achieved in the normal children. They showed less ability to fixate on visual stimuli.

It was obvious, therefore, that structured and free observations of both groups of children showed marked differences in qualitative performance between the two groups. The language disordered group displayed less mature strategies and struggled to concentrate. They were slower and less co-ordinated in responses.

The only obvious similarity between the groups was a willingness to co-operate and please as well as an ability to relate well to an unfamiliar person.



## TEST RE-TEST RELIABILITY

### Procedure

In order to assess the consistency and reliability of the Inventory, a test-retest method was used, involving half the sample of each group of normal children, which was randomly selected and re-assessed within 28 - 30 days of initial Assessment.

The relationship between test and re-test scores was calculated using Spearman's Rank Order Correlation. The results are set out in Table 5.9

Table 5.9 Test and Re-Test Correlations in the Normal Sample

	Rec.	Assoc.	Ret.	Int.	Sub-T. Total	H.A.V. Total
Haptic	0.96	0.85	0.91	0.82	0.95	0.97
Auditory	0.99	0.95	0.77	0.98	0.95	
Visual	0.84	0.77	0.94	0.86	0.93	

Note: All correlations are significant at  $p < 0.001$ .

Subtests show reliability coefficients ranging from 0.77 to 0.99, suggesting only small variations in performance when the test is repeated within a 4 week interval.

The Auditory Retention and Visual Association tests show the lowest correlations. These two sub-tests have three sub-test areas, requiring a change of instruction and mental set. This may, therefore, make the task more complex and open to other factors, such as distraction, concentration, etc., causing less reliability.

In general, therefore, the Test Battery shows an acceptable level of test - Retest reliability.

### VALIDITY

Validity considers the question of whether the Assessment measures what it claims to measure. Obviously, the content of the Assessment is of prime importance here. If it is to be a useful measure of performance it must be representative of the kinds of tasks that children are required

to perform in formal learning situations, such as those involved in school based curricula. Items for the Inventory were selected on this basis except in the Haptic area, involving oral and manual stereognostic tasks. These may not be directly related to academic learning, but they are essential to eating, speaking, moving, writing and understanding of spatial concepts. This is an area ignored in formal testing procedures, but is considered as equally important in contributing to success in formal learning.

As well as CONTENT, we consider formally CONCURRENT and CONSTRUCT VALIDITY.

#### Concurrent Validity

Here, the attempt is made to measure something it is not possible to measure directly. - eg. We cannot measure how a child processes information directly, but we can measure performance of tasks that purport to do this and compare them with other widely used measures.

In order to do this, the Haptic, Auditory and Visual Tests were correlated with:-

1. The Renfrew Action Picture Test (R.A.P.T.) - a test of language comprehension and expression.
2. The Raven's Coloured Progressive Matrices (R.P.M.) - a test of non-verbal thinking.

Table 5.10 shows the correlations of these 2 tests with the H.A.V. Battery.

Table 5.10 Correlation Table comparing R.A.P.T. & R.P.M. with H.A.V. on the Normal Sample.

Renfrew	0.69	0.65	0.68
Ravens	0.71	0.67	0.79
	H.	A.	V.

Note: All are significant at  $p > 0.001$

Correlations for all three subtest areas, Haptic, Auditory and Visual, with both Renfrew and Ravens are substantial and marked, although all are less than the +0.9 standard co-efficient of reliability, as we would expect if the test is not simply to duplicate existing measures.

The correlation co-efficients obtained suggest that the H.A.V. is measuring a behavioural area that has similarities to the 2 comparative tests. The H.A.V., however, samples other behaviours and attempts to separate skill areas in an information processing battery of each modality. It, therefore, samples a wider range of skills at different depth.

The comparison instruments differ from the H.A.V. in the following ways:-

1. Renfrew. This test has bi-modal stimuli input (ie. picture and instruction). It analyses output from the point of view of:-

- a) Information - linking previous knowledge/experience to thinking skills.
- b) Structure - considering language competence and performance from response output.

It is, therefore, more appropriately used as a screening device rather than as a diagnostic assessment to pinpoint precise problem areas.

2. Ravens P.M.T. This test uses non-verbal stimuli for pattern completion tasks. Although subjects may use auditory strategies to help solve the task problems, these tests are not primarily dependent on symbolic knowledge and skills. It is, therefore, a purer form of cognitive 'test' rather than the cognitive/linguistic Renfrew approach.

Both these tests, therefore, are more circumscribed in the aspects of thinking/language upon which they focus, in comparison to the broader based H.A.V. Assessment. The correlation co-efficients support this contention.

#### Construct Validity

This heading is used to consider whether the H.A.V. Assessment justifies the information processing model of separation into distinct areas of recognition, association, retention and integration.

Tables 5.11a and b , looks at correlation co-efficients of the Haptic, Auditory and Visual Subtests and their totals, within areas of recognition, association, retention and integration across as well as within modalities, in the Normal Sample. (N).

Table 5.11a tabulates the correlations and their means for the 4 areas across H.A.V.

Table 5.11b shows the mean correlation co-efficients for each sub-table within H.A.V.in N.

Table 5.11a. Mean Correlations for the 4 Areas across H.A.V.

	R	A	Re	I	
R	0.48	0.50	0.47	0.56	R = Recognition
A		0.54	0.61	0.56	A = Association
Re			0.38	0.43	Re = Retention
I				0.44	I = Integration
Mean	0.46				

Table 5.11b Mean Correlations for the 4 Areas within H.A.V.

<u>HAPTIC</u>				<u>AUDITORY</u>				<u>VISUAL</u>						
	R	A	Re	I		R	A	Re	I		R	A	Re	I
R		0.61	0.61	0.58			0.67	0.55	0.67			0.62	0.62	0.67
A			0.80	0.75				0.49	0.61				0.58	0.58
Re				0.69					0.02					0.80
I														
Mean	0.70				0.49				0.64					
Total = 0.61														

Tables 5.11a and 5.11b indicate higher correlations within than across

modalities. This seems to support the view, expressed in Chapter 3, that these 4 processes are essentially totally interactive, but to enable a problem to be pin-pointed with greater accuracy, there is utility in separating out the processes and attempting to keep other skills in low loading. Obviously where correlations are marked eg. visual retention/integration and haptic retention/association (0.8) this is not so well achieved as when correlations are negative. eg. auditory integration/retention (-0.02).

Correlations are lowest in the Auditory area, suggesting a wider range of skills and processes tapped in this processing channel. Auditory processing, involving the understanding and use of a complex and interactive interweaving of prosodic, phonological, linguistic, semantic and pragmatic codes is man's highest achievement and, therefore, likely to tap a wider skill area.

Table 5.11a shows that correlations across H.A.V. are low (eg. 0.3 retention) to moderate (eg. 0.5 association).

This suggests that Haptic, Auditory and Visual processing are essentially different in strategy, although, perhaps, having some core components. For instance, in the Association area, processing depends, in all modalities, on appreciating features of similarity and difference and linking present information to previous experience and knowledge. Although there is an underlying similarity, in the general pattern of the activity across modality, there are obviously different strategies in use across channels to deal with present and past information. This is discussed, at some depth, in looking at the main results of the data analysis.

When considering the low correlations in the areas of retention there is substantial evidence of the different coding strategies used in dealing with auditory, visual and haptic stimuli, and this is fully considered in the final discussion to the Chapter.



The higher correlations, therefore, within than across modality, suggest that within modality there is an overlap of skills between areas. These, however, are negligible to moderate, suggesting there is utility in separating out the differing processes. Across modality the correlations are low but positive, which may indicate some similarities but significant differences in the coding strategies of different channels.

## MAIN RESULTS

### 1. Comparison of Normals (N) and Language Disordered (L.D.), across age, on H.A.V. Totals.

Table 5.12 Comparison of Mean Scores for N. and L.D. population across age

HAPTIC		AUDITORY		VISUAL	
Mean	S.D	Mean	S.D	Mean	S.D
36.15	6.14	36.60	7.42	57.33	8.98
22.50	5.07	34.95	13.63	35.40	11.28
10.84		19.82		11.28	
0.001					

Results from the above table show that the language disordered children, across age, have large discrepancies in Haptic and Visual, as well as Auditory processing areas, in comparison with normals of similar age. The statistical difference is significant for all areas, at a  $p < 0.001$  level. The greatest difference is shown in the Auditory area. One explanation may be that Auditory stimuli are more transient, in nature, than either Visual or Haptic, and, therefore, depend very heavily on short term memory processes. Moreover, today's children are very visually cued at home (television/video) and at school (educational aids), and Teachers constantly report inadequate levels of listening skills in the classroom (Gibbons, 1985).

Standard deviations appear much higher for the language disordered group, on Auditory and Visual tests, indicating a wider variation in score in this

population.

2. Comparison of Normals (N) and Language Disordered (L.D.), across age on subtests of H.A.V.

Tables 5.13 Comparison of Subtest Means for N. and L.D. across age

HAPTIC

	R		A		Re		I	
	Mean	S.D	Mean	S.D	Mean	S.D	Mean	S.D
N	10.60	1.39	8.80	1.86	8.00	1.90	8.15	1.78
L.D	6.33	1.35	5.43	1.32	4.73	1.40	6.02	1.78
t	14.69		9.38		8.80		6.86	
P	0.001		0.001		0.001		0.001	

AUDITORY

	R		A		Re		I	
	Mean	S.D	Mean	S.D	Mean	S.D	Mean	S.D
N	42.55	4.90	8.83	1.50	39.93	4.54	54.95	24.11
L.D	20.48	7.44	4.48	2.86	11.38	11.49	13.58	14.80
t	15.67		8.53		14.62		9.25	
P	0.001		0.001		0.001		0.001	

VISUAL

	R		A		Re		I	
	Mean	S.D	Mean	S.D	Mean	S.D	Mean	S.D
N	10.30	2.12	9.15	1.79	17.05	4.32	20.83	2.09
L.D	8.23	2.33	7.35	1.67	7.48	5.54	12.35	3.61
t	4.17		4.65		8.62		12.85	
P	0.001		0.001		0.001		0.001	

The tables indicate that in all subtest areas of H.A.V. there are significant differences (  $p < 0.001$  ) between the normal and language disordered groups. The Standard Deviations are much smaller in Visual and Haptic areas for both groups than is the case in the Auditory area.

More variable scores are, therefore, present in Auditory sub-tests, particularly in the area of Integration. The complex analysis (described in detail in Chapter 4) of the data, in this sub-test, may account for this variability in scores.

### 3. Comparison of Age Trends for Normals (N) and Language Disordered (L.D.) groups on H.A.V. Totals.

Tables 5.14 Comparison of Age Trends for N and L.D. on H.A.V.

#### HAPTIC

AGE	NORMALS		LANG. DIS	
GROUP	M	S.D	M	S.D
1 and 1a	7.82	1.23	4.68	1.11
2 and 2a	8.27	1.55	5.25	1.40
3 and 3a	9.12	1.29	5.90	0.92
4 and 4a	10.92	0.76	6.68	1.48
F	12.34		5.43	
P	0.001		0.001	

#### AUDITORY

AGE	NORMALS		LANG. DIS	
GROUP	M	S.D	M	S.D
1 and 1a	29.28	7.44	19.35	7.27
2 and 2a	32.20	5.14	8.52	7.30
3 and 3a	41.03	5.71	16.30	8.79
4 and 4a	43.74	6.69	15.73	7.58
F	14.05		2.84	
P	0.001		NS	

#### VISUAL

AGE	NORMALS		LANG. DIS	
GROUP	M	S.D	M	S.D
1 and 1a	12.40	2.26	7.05	2.53
2 and 2a	12.78	2.18	7.48	3.15
3 and 3a	15.50	1.27	9.63	2.72
4 and 4a	16.65	1.24	11.25	2.91
F	12.53		4.60	
P	0.001		0.05	

Looking at the tables 5.14, we find a significant difference (  $p < 0.001$  ) in mean scores for the Normal population in all H.A.V. areas.

This difference is not shown, to such an extent, in the Language disordered population. In fact, there is no significant age trend in the L.D. sample for the Auditory Subtest. The pattern of scores, therefore, does not show the same clear age trends as demonstrated in the Normal group. For example, in the Auditory section the 6 - 7 years old group have a higher mean score than do the older 7 - 8 years group. Haptic areas show the clearest age trend (  $p < 0.01$  ) followed by Visual areas with a significant level of  $p < 0.05$ .

4. Comparison of Age Trends for Normals (N) and Language Disordered (L.D) Groups on Sub-tests of H.A.V.

Tables 5.15 Comparison of Sub-test Means for N. and L.D. in each Age Group

NORMALS

HAPTIC

Groups

	R		A		Re		I	
	M	S.D	M	S.D	M	S.D	M	S.D
1	9.40	1.43	7.70	1.06	6.80	1.03	7.40	1.35
2	10.50	0.97	7.90	2.06	7.10	1.79	7.60	1.35
3	10.60	1.35	8.70	1.34	7.80	1.48	9.40	0.97
4	11.90	0.32	10.90	0.74	10.30	0.82	10.60	1.17
F	8.53		11.04		11.17		15.65	
S	0.001		0.001		0.001		0.001	

AUDITORY

Groups

	R		A		Re		I	
	M	S.D	M	S.D	M	S.D	M	S.D
1	37.80	5.05	7.80	1.32	37.00	6.57	34.30	11.83
2	40.20	2.97	7.80	1.03	38.70	1.83	42.50	14.73
3	45.00	2.45	9.30	0.95	43.20	2.70	66.60	16.75
4	47.20	1.32	10.40	0.84	40.80	3.43	76.20	21.17
F	17.65		14.53		4.39		12.59	
S	0.001		0.001		0.01		0.001	

VISUAL

Groups

	R		A		Re		I	
	M	S.D	M	S.D	M	S.D	M	S.D
1	8.10	2.08	7.80	1.40	14.10	3.00	19.60	2.55
2	9.80	2.10	8.50	1.78	13.50	3.66	19.80	1.16
3	11.50	0.85	9.60	1.27	19.30	2.00	21.60	0.97
4	11.80	0.42	10.70	1.34	21.30	2.26	22.80	0.92
F	12.17		7.60		18.90		11.55	
S	0.001		0.001		0.001		0.001	

LANGUAGE DISORDERED

HAPTIC

Groups

	R		A		Re		I	
	M	S.D	M	S.D	M	S.D	M	S.D
1a	5.70	0.95	4.80	0.79	4.00	1.15	4.20	1.53
2a	5.50	1.27	4.80	1.48	4.40	1.26	6.30	1.57
3a	6.70	1.25	5.70	0.67	4.70	1.06	6.50	0.71
4a	7.40	1.08	6.40	1.51	5.80	1.55	7.	1.73
F	6.03		4.36		3.69		7.65	
S	0.005		0.01		0.05		0.001	

AUDITORY

Groups

	R		A		Re		I	
	M	S.D	M	S.D	M	S.D	M	S.D
1a	15.70	4.90	4.30	2.54	10.80	8.22	6.40	13.40
2a	17.30	5.60	2.90	2.73	5.20	6.25	8.70	14.61
3a	24.10	8.88	4.70	3.07	14.70	13.46	19.50	9.74
4a	24.80	5.83	5.80	2.46	12.80	14.41	19.50	17.41
F	5.14		1.95		1.85		2.40	
S	0.005		N.S		N.S		N.S	

VISUAL

Groups

	R		A		Re		I	
	M	S.D	M	S.D	M	S.D	M	S.D
1a	7.70	2.41	6.30	1.64	3.60	3.69	10.60	2.37
2a	6.80	2.04	7.20	1.81	5.80	4.71	10.10	4.04
3a	9.10	2.28	7.70	1.57	8.30	4.60	13.40	2.41
4a	9.30	1.89	8.20	1.23	12.20	5.53	15.30	2.98
F	3.01		2.64		6.22		6.52	
S	N.S		N.S		0.005		0.001	

In the above tables we find the difference, in pattern, between the 2 populations emerging clearly.

In the Normals there is a significant difference ( $p < 0.001$ ) between age groups in all sub-test areas of H.A.V. , and a progression upwards of scores in each area. The pattern is not so clear in the Language Disordered population. There are significant age trends in all Haptic sub-test areas, as well as Auditory recognition and Visual retention and integration. Haptic and Visual recognition, Auditory recognition, association and retention sub-tests show variability in scoring patterns with no clear



upward progression with age. In the other 7 sub-test areas, however, the age trend is progressively upwards, but the differences between mean scores is not as significant or marked as in the Normal population. The Language Disordered group are a heterogeneous group, displaying considerable problems in learning in formal school environments. Half of this population were being educated in specialised Language Units and the other half had been referred to me because of inadequate teaching/treatment progress. Five out of twelve subtests show no significant age trend, in areas of Auditory and Visual processing. This demonstrates an unpredictable and unstable performance pattern on the part of the Language Disordered group in comparison with Normals.

5. Comparison of Normals (N) and Language Disordered (L.D.) on Sub-tests of H.A.V. Recognition/Association/Retention/Integration Areas, within each Age Group.

Tables 5.16 a and b details the comparisons, within each age group, of N and L.D. on sub-tests of H.A.V. areas. Table 5.16 summarises the information of subtests that do not reach a  $p < 0.001$  level of confidence. Only detailed information is given regarding Haptic and Visual Areas, as all subtests of the Auditory area showed  $p < 0.001$  level of confidence. In the Haptic Area, only in Groups 3/3a, on the Association Movement Test is there no significant difference ( $p < 0.52$ ) between the two groups. In the Visual Area, Groups 1/1a show no significant differences on 4 Recognition and Association subtests. Groups 2/2a show 4, and Groups 3/3a show 1 test/s with no significant difference, in the Association Area. In the break down, by age, we discover that in Groups 4/4a (7-8yr.) all sub-tests are beyond the 0.05 level of confidence. Differences between the groups appears to become more marked as age increases. This confirms observations and comments amongst professionals involved with language disordered children, that academic performance, compared with peers, tends to decrease with age.

Table 5.16 Sub-tests of H.A.V. that do not reach a  $p < 0.001$  level of confidence.

**HAPTIC**

Groups	N.S.	$p < 0.05$	$p < 0.01$	$p < 0.005$
1/1a			Retention (Movement)	Retention (Manual)
				Association (Movement)
2/2a		Retention (Movement)	Association (Manual & Movement)	
		Integration (Total)	Retention (Manual)	
3/3a	Association (Movement)	Retention (Movement)	Recognition (Movement)	
4/4a	—	—	—	—

**VISUAL**

1/1a	Recognition	Association (Total)		Integration (Sorting)
	Association 1, 2, 3			
2/2a	Association 1, 2, 3, Total		Integration (Sorting)	Recognition
3/3a	Association 1	Association 3, Total		Recognition
		Integration (Sorting)		Association 2
4/4a		Association 1, 2	Association 3	
			Integration 1, 3	

Association

- 1 = odd in sequence
- 2 = similar in sequence
- 3 = pair in sequence

Integration

- 1 = sorting
- 3 = picture recall

Table 5.16a. Comparison of N. and L.D. on sub-tests of H.A.V. Recognition/Association/Retention/Integration Areas

HAPTIC

RECOGNITION												ASSOCIATION												RETENTION												INTEGRATION											
Oral		Manual		Movement		Total		Oral		Manual		Movement		Total		Oral		Manual		Movement		Total		Oral		Manual		Movement		Total		Oral		Manual		Movement		Total									
M	S.D	M	S.D	M	S.D	M	S.D	M	S.D	M	S.D	M	S.D	M	S.D	M	S.D	M	S.D	M	S.D	M	S.D	M	S.D	M	S.D	M	S.D	M	S.D	M	S.D	M	S.D	M	S.D										
Group 1/1a																																															
N	2.50	0.53	3.40	0.52	3.30	0.68	9.40	1.43	1.90	0.32	3.10	0.32	2.70	0.68	7.70	1.06	2.00	0.00	2.80	0.63	2.00	0.47	6.80	1.03	7.40	1.35																					
L.D	1.20	0.42	2.50	0.53	2.00	0.47	5.70	0.95	0.90	0.32	2.20	0.63	1.70	0.68	4.80	0.79	0.80	0.42	2.00	0.47	1.20	0.79	4.00	0.37	4.20	1.55																					
F	1.56	1.04			2.05		2.27		1.00		4.00		1.00		1.80		0.00		1.80		2.80		1.25		1.32																						
S	0.001	0.001			0.001		0.001		0.001		0.001		0.001		0.005		0.001		0.005		0.01		0.001		0.001																						
Group 2/2a																																															
N	3.10	0.57	3.90	0.32	3.50	0.53	10.50	0.97	2.10	0.74	3.00	0.94	2.80	0.63	7.90	2.08	1.70	0.68	2.90	0.74	2.50	0.71	7.10	1.79	7.60	1.35																					
L.D	1.00	0.47	2.40	0.52	2.10	0.74	5.60	1.27	0.90	0.57	2.10	0.57	1.80	0.79	4.80	1.48	0.60	0.52	2.10	0.57	1.70	0.68	4.40	1.27	6.30	1.57																					
F	1.45	2.67			1.96		1.71		1.69		2.76		1.56		1.98		1.71		1.69		1.10		2.01		1.35																						
S	0.001	0.001			0.001		0.001		0.001		0.01		0.01		0.001		0.001		0.01		0.05		0.001		0.05																						
Group 3/3a																																															
N	3.10	0.57	3.90	0.32	3.60	0.70	10.60	1.35	2.60	0.52	3.40	0.52	2.70	0.68	8.70	1.34	2.20	0.42	3.20	0.79	2.40	0.70	7.80	1.48	9.40	0.97																					
L.D	1.20	0.42	3.10	0.57	2.40	0.84	6.70	1.25	1.10	0.57	2.10	0.57	2.50	0.71	5.70	0.68	0.90	0.74	2.10	0.32	1.70	0.48	4.70	1.06	6.50	0.71																					
F	1.81	3.22			1.45		1.16		1.21		1.21		1.10		3.93		3.06		6.22		2.10		1.94		1.87																						
S	0.001	0.001			0.01		0.001		0.001		0.001		0.52 (N.S)		0.001		0.001		0.001		0.05		0.001		0.001																						
Group 4/4a																																															
N	3.90	0.32	4.00	0.00	4.00	0.00	11.90	0.32	3.20	0.42	4.00	0.00	3.70	0.48	10.90	0.74	3.00	0.47	3.70	0.48	3.60	0.52	10.30	0.82	10.60	1.17																					
L.D	1.40	0.52	3.10	0.74	2.90	0.57	7.40	1.08	1.00	0.47	2.80	0.79	2.60	0.69	6.40	1.51	1.00	0.47	2.60	0.70	2.20	1.03	5.80	1.55	7.10	1.73																					
F	2.67	0.00			0.00		11.56		1.25		0.00		2.10		4.16		1.00		2.10		4.00		3.54		2.17																						
S	0.001	0.001			0.001		0.001		0.001		0.001		0.001		0.001		0.001		0.001		0.001		0.001		0.001																						

Table 5.16b. Comparison of N. and L.D. on Sub-tests of H.A.V. Recognition/Association/Retention/Integration Areas

VISUAL

	RECOGNITION ASSOCIATION						RETENTION						INTEGRATION					
	Recognition	Odd in seq.	Similar in seq.	Pair in seq.	Assoc. T	Retention T	Sorting	Story seq.	Picture Rec.	Picture Rec.	Integration T							
Group 1/1a																		
M	S.D	M	S.D	M	S.D	M	S.D	M	S.D	M	S.D	M	S.D	M	S.D	M	S.D	M
N	8.10	2.08	1.70	0.95	3.50	0.53	2.60	1.17	1.80	1.40	14.10	2.99	8.00	0.00	3.40	1.35	5.30	0.82
L.D	7.70	2.41	1.20	0.92	2.90	1.29	2.20	1.31	6.30	1.64	3.60	3.69	6.60	1.35	0.10	0.32	3.00	1.56
F	1.34		1.07	5.96		1.26		1.37		1.51		0.00	15.22		1.97		1.82	
S	0.64 (N.S)	0.25 (N.S)	0.19 (N.S)	0.48 (N.S)		0.05		0.001		0.005		0.001		0.001		0.001		0.001
Group 2/2a																		
M	9.80	2.10	2.10	0.74	3.40	0.70	3.00	0.94	8.50	1.78	13.20	3.66	7.80	0.63	3.20	1.40	5.40	0.70
L.D	6.80	2.04	1.50	0.85	3.00	0.67	2.70	1.34	7.20	1.81	5.80	4.71	5.60	2.32	0.50	0.71	2.90	1.91
F	1.05		1.33		1.10		2.01		1.04		1.66		13.44		3.91		7.48	
S	0.005	0.11 (N.S)	0.21 (N.S)	0.57 (N.S)		0.12 (N.S)		0.001		0.01		0.001		0.001		0.001		0.001
Group 3/3a																		
M	11.50	0.85	2.20	0.92	3.90	0.32	3.50	0.71	9.60	1.27	19.30	2.00	8.00	0.0	4.00	0.00	5.80	0.42
L.D	9.10	2.85	1.90	0.88	3.20	0.65	2.60	1.08	7.70	1.58	8.30	4.59	7.30	1.06	0.80	0.92	3.70	1.34
F	7.22		1.10		4.00		2.31		1.53		5.27		0.00		0.00		10.06	
S	0.005	0.46 (N.S)	0.005	0.05		0.05		0.05		0.001		0.05		0.001		0.001		0.001
Group 4/4a																		
M	11.80	0.42	3.00	0.94	3.90	0.32	3.80	0.65	10.70	1.34	21.30	2.26	8.00	0.00	4.00	0.00	6.00	0.00
L.D	9.30	1.89	2.10	1.10	3.30	0.68	2.80	0.92	9.20	1.23	12.20	5.53	7.60	0.97	1.30	1.16	4.50	1.78
F	20.06		1.36		4.56		2.11		1.18		5.98		0.00		0.00		0.00	
S	0.001	0.05		0.05		0.01		0.001		0.001		0.01		0.001		0.01		0.001



The closer scores on the Visual Recognition and Association sub-tests, in Groups 1-3, may reflect classroom practice at this primary age level. In the Schools, attended by the sample, there is emphasis on visual matching and linking tasks, as a preparation for Reading, and every class displayed quantities of this resource material. At this stage, children may be directed to this sort of material, by the Teacher, as it involves little explanation or adult direction and allows Staff the opportunity to work with small groups with reading and number. Thus, children are very used to handling this sort of activity, and so score patterns, may, therefore, to some extent, reflect classroom practice. As Visual tasks become more complex ( ie. Retention and Integration sub-test areas ), the difference between Normals and Language disordered becomes significant.

The Visual Recognition and Association Tests, therefore, may illustrate Classroom conditioning. Structured materials and emphasis, in a particular area may lead to improved performance by the language disordered groups. In Groups 1/2, half of the Language disordered sample attended the Kenilworth Language Unit, where there was high structure to learning tasks and a psycholinguistic approach to skill training. Other professionals, such as Psychologists and Doctors, noted the high success rate of this group to teaching and learning in the Unit environment.

The Schools, attended by the Sample, showed a change of teaching emphasis, in the last year of the Infant age range (7-8yr). There was less specific skill training and more application of learning to extended situations (eg. Project work). Classroom experience, therefore, becomes more abstract and less involved with here and now situations.

My Classroom observations have shown that children with language disorder start to find learning difficult when tasks are complex and demand a series of mental strategies to cope. These studies confirm a widening gap, with age and complexity of task, between normal and language disordered children's performance.



6. Correlation Patterns of H.A.V. Subtest Areas in the Language Disordered Population.

Table 5.17 Correlation Patterns of H.A.V. Sub-tests in the L.D.

<u>Haptic</u>					<u>Auditory</u>					<u>Visual</u>				
	R	A	Re	I		R	A	Re	I		R	A	Re	I
R		0.68	0.58	0.60			0.67	0.46	0.51			0.44	0.71	0.60
A			0.70	0.72				0.65	0.57				0.54	0.43
Re				0.70					-0.30					0.70
I														
Mean	0.66					0.42					0.57			

Total = 0.55

The above table shows the correlation patterns for the H.A.V. Sub-tests for the L.D. group. As with the Normal group, discussed under CONSTRUCT VALIDITY, coefficients are below the 0.9 level, suggesting, with both groups, that in spite of the interactivity of information processes, it is possible and useful to separate these out and produce skill areas where others are in lower loading.

7. The Mean Correlations for each H.A.V. Channel Total in the Normal (N) and Language Disordered (L.D.) Populations.

Table 5.18 The Mean Correlations for H.A.V. Totals in N and L.D. Children

NORMALS

	H	A	V
H		0.70	0.36
A			0.49
V			

LANGUAGE DISORDERED

	H	A	V
H		0.66	0.34
A			0.42
V			

Looking at the above table, we find that correlations for the language disordered group are lower than for the normal group, in each channel area. This may suggest that the language disordered children employ less range of skills, in coping with task responses, than do the normal group. Certainly, task strategies, (discussed previously in the Chapter) suggest that this may be so. Correlation patterns are lower in the Auditory area than either Haptic and Visual . This may indicate a wider range of skills in this area.

## QUANTITATIVE AND QUALITATIVE ANALYSIS OF DATA: A DISCUSSION

The Haptic, Auditory and Visual Inventory has two main purposes:-

1. To ascertain if a model, separating out sensory processing and dividing sub-skill processes has validity and utility for the Assessment of children's information processing capacity.
2. To make comparisons of a group of normal (N) and a group of Language disordered (L.D.) children, examining any significant differences that appear to exist between them.

### 1. The Haptic, Auditory and Visual (H.A.V.) Model.

Discussion, in Chapter 3 and 4 focussed on the H.A.V. model and its intention to provide a broader based profile of children's behaviour, by looking at the separate integrity of each main channel of information processing. Haptic, Auditory and Visual processes are divided into 4 skill areas - Recognition, Association, Retention, and Integration, in an attempt to assess the utility of separating out these to pinpoint problems with more precision.

Correlation patterns of both N and L.D. groups (Tables 5.11a and b, and 5.17) do suggest that areas can be differentiated, to some extent, by keeping other skills in low loading. The intramodality correlations for the normal group range from -0.02 - 0.80 (median = 0.62) and in the language disordered group from -0.30- 0.70 (median = 0.58). The fact that co-efficients are from low to marked supports Kephart's (1960) position that the input - output system is a closed one, and so "we cannot stop activities in one area while we investigate the effects of changes in the other".

Case Studies, in Chapters 6-9 support, however, the clinical utility of sub-skill analysis, when considering the context of classroom teaching/ learning operations.

## 2. Group Differences

Statistical analyses of the N and L.D. groups show significant differences in Haptic, Auditory and Visual processing. Differences tend to increase with age (Table 5.12 and 13) although, in the Visual area remain stable in Groups 2,3 and 4. This may be because in the 5-8 yr. age group , visual skills have high priority in teaching/learning situations. It is the least transitory of information processing areas and probably, from the classroom management point of view, easier to employ. My own teaching experiences, in schools, indicates that the majority of learning takes place from visual information/materials involving pictures, words, and numbers in worksheets and books.

Performance of the normal group shows a developmental progression (Table 5.14) in performance from 4-8 yr. This is not so marked in the language disordered group, thus supporting the feelings of teachers and others that performance tends to decrease in comparison with peers as age increases. The fact that there appears to be significant differences between N and L.D. children, on all information processing channels, does beg the question whether the label 'language disorder' is an appropriate one, and if applied, may limit the overall perception of a child's difficulties. Although differences on the Auditory channel are greater than either Visual or Haptic, this may be due to the nature of the information processing area and the difference in content. Auditory stimuli are transitory in nature and heavily dependent on short term memory. Across channel comparisons, therefore, may not be valid or useful.

### Qualitative Differences

Under TASK STRATEGIES we considered differences observed in the way groups coped with the test situation.

#### General Differences - Language Disordered Group (L.D.)

1. The L.D. group displayed lower levels and less stability in attention control.
2. The L.D. group took longer to complete tasks.
3. The L.D. children showed no overt strategies (eg. verbal rehearsal of visual material).
4. The L.D. group showed less mature visual scanning from left - right.
5. The L.D. group displayed difficulties in adaptive behaviour and needed frequent repetition of instructions.

Examination of the raw data, reveals the following, considered under separate processing areas.

#### a) Haptic

Most noticeable was the L.D. group's lack of ability to know how to cope with shape stimuli. In the oral recognition tasks they showed no attempts to move the objects around, in the mouth, in order to feel form differences. They did not exhibit rapid and persisting tongue tip movements as did the N. group. Similar patterns were shown in the manual tasks. There was less attempt to use finger tip movement to rotate and examine the shapes. In the Integration task, when blindfolded and required to fold a piece of paper, put it in an envelop and lick down the flap, the L.D. children displayed poorer organisation of the various components of the task when compared with the N. group. They involved themselves in more trial and error approaches and showed less motivation and persistence in completing the task well. These examples are demonstrated by looking at the comparison of means for Haptic Recognition (oral and manual) and Integration sub-tests for N. and L.D. groups in the table below.



Table 5.19 A Comparison of Means on Haptic Recognition (oral and manual) and Integration Sub-tests of H.A.V. for N. and L.D. Groups

	(oral) Haptic Recognition	(manual) Haptic Recognition	Haptic Integration
N	3.15	3.85	8.75
L.D	1.20	2.77	6.02
t	14.69	9.04	6.86
P	0.001	0.001	0.001

b) Auditory

In the Auditory Recognition tasks, there was a difference in the listening mode between the N. and L.D. groups. The L.D. children did not appear to integrate hearing with listening so successfully. They showed less physical alertness (observed by posture and facial expression) and needed constant reminders with reference to the task.

The Auditory Retention tasks may suggest that L.D. do not code the same features as N. children. For example, every L.D. subject failed to code the unstressed syllable of words such as a'part, a'bout, a'side, in word repetition tasks, although clearly demonstrating ability to articulate the unstressed neutral vowel /ə/. This may be due to poorer perception of the underlying patterns of the acoustic stream. This, together with a marked tendency to reduce polysyllabic words, and reproduce the wrong intonation patterns (eg. questions often repeated as statements) may suggest basic problems in coding prosody and the underlying time pulse of speech sequence.

A tendency to simplify phonological patterns was continually demonstrated by the L.D. children. For example, syllable reduction - te/le/phone - te/foun, omission of sounds in blends - photography - fəfəgəfi,

consonant harmony - buttercup - butotap.

This may be due to poor perception of time pulse, sound differences, problems with articulating complex motor sequences, or (moto) kinesthetic feedback. There may, of course, be involvement of all these aspects. In Auditory Retention, sentence repetition tasks, the L.D. made no reponse (N.R.) to 42% of items. Those attempted frequently showed a non-processing strategy, with just the last 2 words of the sequence repeated. This is an example of what Therapists call 'echo - box' memory, in which physical rather than structural or semantic characteristics of language are retained. In contrast, the normal group generally derived meaning from the sentence even when unable to reproduce the sentence with complete accuracy. A typical response to Group 4 Sentence 10 - 'Even the three very sad dirty faced boys were laughing', was 'The three dirty faced boys were laughing'. Therefore, sentence recall involves reproduction of the memory episode and text editing (Kintsch & van Dijk, 1979).

Often the LD made word substitution errors (palace for pantry) which Bilsky et al (1983) explain as a break down at the second stage reflecting poor editing skills.

The L.D. group displayed just as much difficulty in accessing the semantic as well as the syntactic information. This was confirmed in the Story-telling task. Story 1, was composed of simple sentences and Story 2, of complex sentence structure. In spite of simple syntax, Story 1 was just as difficult to access for meaning as Story 2. None of the L.D. children were able to reach a level where half the details were correct, whereas most of the normal children could do so with ease.

Liles (1987) and Roth (1987) have recently alerted us to the lack of linguistic cohesion that these responses represent. In half the LD stories, there was evidence of the story "gestalt", but fewer details, less markers for time, space and causal relations.

c) Visual

In the first two sub-tests, Recognition and Association, the L.D. displayed less difference in performance, in comparison with the normal group.

Most noticeable, however, was a persisting tendency to mirror match items. This was not found in the N. group, after the 4-5yr. level, but was present in Group 4a (7-8yr.) of the L.D. (4 out of 10 children).

In Association tasks, the L.D. were well able to make second order relationships, in the groups odd/similar/same in sequence, but they demonstrated problems in adaption between sub-tests, and instructions needed repetition to prevent perseverating responses. The N. groups were able to shift 'set to attend' with relative ease.

Orientation, caused a problem in the Recognition matching tasks. (mirror response). This persisted severely in Retention tasks, where L.D. children showed as much problem with orientation of symbols as sequence. This may demonstrate a lack of use of relative codes (Bryant, 1974), ie. a failure to take in, and remember the relations between things. As Bryant's Studies (1974) indicate, children manage relative codes with ease.

Visual Retention, showed one of the largest differences in performance between N. and L.D. groups and orientation was a marked problem with the later children, causing more problems than sequence. This may indicate the insufficient spatial coding strategies of the L.D. children.

In the Visual Integration picture sequence tasks, the L.D. groups repeated problems of ordering, evident in Retention tasks. Not one in the Group of 40 children, produced the Story Sequence completely correctly. They displayed impulsive trial and error attempts and change of mind. In contrast, the normal children found this easy, demonstrating more reflective styles of operation, and fewer errors in response.

Such academic tasks reflect elements of top-down and bottom-up processing or some blend of the two. Getting the gist of the story is a top-down process requiring a narrowing down of the topic through a variety of stages. However, putting the sequences together demands a focus on detail which is a bottom up approach proceeding from the more abstract (individual cards) to the concrete situation (completed story sequence).

Although most of us have a preferred strategy we need a cognitive (deductive thinking) and data driven (inductive thinking) style in order to process information satisfactorily. The results suggest that LD children are not able to apply a joint approach in this particular visual integration task.

The Complex Picture, in the Integration Area sub-test, threw up many observations I had noticed in clinical situations, when working with children with learning difficulty. Many of the L.D. children closed their eyes/averted their gaze, as if wanting to avoid studying the picture. They found it difficult to search for details, in the picture context, and generally impossible to remember them when the picture was removed. The performance of the L.D. children, on the Visual Tests, had a marked impact on the Teachers, who were invited to observe some of the group, on a repeat session, in School. This, more than the other areas, was one they could identify with, from teaching experience, and made many aware of the poor quality of some teaching materials.

Here again, the LD group may have lacked the cognitive (deductive) thinking style along with the data driven mode (inductive) and, therefore, not be able to cope with a sophisticated integrated learning task such as the complex picture represents. Wallach and Miller(1988) support this view in studies of children who are language disabled.

## SUMMARY

Quantitative and qualitative analysis of the data, demonstrates that L.D. children show significant problems in dealing with critical features, relationships and patterns, in information presented, whatever the modality, when compared with normal children of the same age, socio-economic level and similar non-verbal intelligence.

This questions the use of the label 'language disorder', and suggests it may mask other problem areas and limit strategies of management.

Functionally, the L.D. group, because of their problems in structural organisation of stimuli, find it difficult, but not entirely impossible to extract meaning. This makes them slow to respond and learn. Their lack of overt strategies (eg. verbal rehearsal), in comparison with normals, leads one to speculate on intersensory patterning and transfer. (Wallach & Miller, 1988)

The work of Attneave and Benson (1969), suggested that different modalities have different facilities for data handling. Auditorily presented items tend to be ordered temporally, while input to the Visual system is more likely to be spatially ordered. Touch seems to be organised successively rather than simultaneously. (Geldard, 1966). Content of material as well as modality presentation may also determine code processing (O'Connor and Owens, 1989). Hermelin, (1978). When the presentation rate for pictures is too fast for subjects to name, these pictures are less remembered than visually presented words in sequential memory tasks. On the other hand, free recall and recognition for the same pictorial material is better than for words. Ellis & Woodbridge (1985). Paivio and Csapo (1971), interpret these results as an indication of the existence of imaginal and verbal memory codes having different attributes.

Visual memory is held to be organised spatially, and the system is inefficient for storing the sequential order of pictorial units.

Conversely, the verbal system is specialised for sequential processing, and storage order is efficient for linguistic units. For concrete words and nameable pictures, providing presentation rate was slow enough, for implicit



(Das et al, 1979; Jarman, 1978; Jarman & Das, 1977) naming, Paivio and Csapo (1971) assume that coding would occur simultaneously in separate linguistic and image stores. Philipchalk and Rowe (1971) presented subjects with the names of animals or objects, which were associated with sounds (eg. cat, clock, drum) or with sounds themselves. In ordered recall names were better remembered, and one explanation for the difference in sequential memory between verbal and non-verbal but auditory material might be that the former can be easily rehearsed and the latter cannot.

When written or spoken words had to be recalled (Donaldson, 1971), there was no difference, due to presentation modality, for either item or order information. Thus, written words or letters were treated as verbal rather than visual material and tended to be temporally ordered. Pictures, as Paivio pointed out, tend to be implicitly named when presentation rates allowed. (Kahn, 1978, 1984; Merrill, 1985; Owens, 1989)

Information is not, therefore, necessarily stored in the modality code presented, but can be transferred to the system best able to deal with it. There is evidence, however, that the L.D. group, in this Study, cannot deal with any but directly presented stimuli. They did not show any verbal rehearsal strategies, as did the N. children, so that information was probably treated far less flexibly.

Ordering, in Motor memory, has been less investigated than Vision or Audition. Pepper and Herman (1970) have assumed that it is similarly structured to memory in other modalities. Wilberg and Samela (1973), state that Motor memory differs, in essential respects, from memory for Auditory and Visual material. The subject has to perform both initial and recall tasks, and in this respect, it can be compared to Verbal memory, in conditions where the subject has to recall what is said. Motor programmes are thus monitored and subject to spontaneous decay and interference. Movements, not under the control of subject (ie. passive ones) are less well recalled, so that output rather than input is crucial for skills involving movement sequences. There are, thus, qualitatively different features from other

other modality memory systems.

Our L.D. group, displayed less difference in Haptic retention than either Auditory or Visual, in comparison with normals. It may be, that this system is more fundamental and, therefore, better developed than Auditory and Visual systems.

Using this Research, as a base for considering the L.D. group, in the present Study, it appears that these children had not developed the ability to transfer information into different codes. The L.D. group did not use speech as a mediator, and this lack of verbalisation appears to have led to unstable responses. Similar conclusions have been reached (Borkowski & Cavanaugh, 1979; Brown, 1974; Butterfield et al, 1973; Reid, 1980 & others by Luria (1963)) with groups of 'so called' 'sub-normal' children.

This L.D. group may be impaired in coding words into percepts and vice versa. This seriously affects Auditory and Visual memory tasks. On the other hand, the results, from the Study, show less problems in recognising and matching patterns, in comparison with normal children.

This leads to speculation about storage of items, and perhaps less ability to draw on the range of codes that are available to others. Failure to derive or evoke verbal or visual representations may lead to sole dependence on the same modality through which stimuli are presented. Qualitative and quantitative evidence seems to lend support to this idea.

The results, therefore, will be problems in dealing effectively with multi - sensory input.

#### Neuro-physiological Speculations

Speculation, is, therefore, focussed on the brain differences that might be involved. Experiments have indicated that the left of the Temporal lobe appears to be the focus for making use of oral symbols (Thompson, 1967). Furthermore, the Temporal lobe is believed to be the central area for both Auditory and Visual memory activities and reports (Bang, 1956) demonstrate this as the first avenue of learning to subside in Adults, when the aging process affects brain tissue. Maybe, therefore, this is the last area to function in some children.

Memory is important in developing attention control and in developing ability to select meaningful input signals and reject redundancies impinging from the outside world. Dr. Gray Walter's work on the E.E.G's of developing brains, reported by Edwards (1973), focusses on a particular wave form, called the C.N.V. - the contingent negative variation. This is an expectancy response, ie. a type of preliminary to the 'set to attend' activity of the reticular formation. Children, below 3 years, do not show this effect and neither do many so called language disordered children. It is said to develop with suitable stimulation, produced by differentiating the modality and the rate and order of stimulus applied. The site of brain wave activity has suggested defective memory and retrieval mechanisms relative to classification of incoming information. Autopsies have demonstrated structural abnormalities in the hippocampus, an area of the brain important for meaning interpretation of incoming stimuli (Ball & Nuttall, 1980; Suetsugu, 1979). Such findings are of interest here. This L.D. group indicated likely problems in intersensory patterning which is, like attention, an activity of the reticular system in the basal ganglia. Attention control, of the L.D. children, was markedly inferior to the normals of comparable age. The implication is, therefore, that this area of the brain has not developed spontaneously and needs careful modality input, in order to do so. The H.A.V. Inventory, is, therefore, seen as a useful instrument to gain information on sensory processing status. It appears to have utility for pinpointing precise problem areas and has thrown up significant differences in processing when comparing language disordered with normal children.

In conclusion, a recent review by Owens(1989) confirms many of the HAV findings. Nugent and Mosley(1987) found that retardates show much less efficient attention allocation and capacity than normals. These processes seem relatively automatic for normal individuals requiring minimal allocation of available brain resources. In contrast those that are retarded appear not to develop automatic processes resulting in fewer resources to hand for higher level problems (Sperber & McCauley,1984). Nettelbeck and McLean(1984) confirm the present results (see test times) reporting that retardates require longer inspection time than normals in order to recognise items to which they are attending. This difficulty can also be seen in the discrimination abilities of retardates (confirmed by HAV results) and may be due to slower initial sensory registration or higher processes responsible for directing attention. Mosley(1985) suggested, after observing visual behaviour, that slower recognition time of retardates was due to a difference in memory scanning rather than the mechanics of responding to stimuli. Wacker and Greenbaum(1984) found that discrimination was enhanced if retardates were taught to verbally rehearse salient dimensions of items. The present study shows that the LD did not demonstrate verbal strategies when dealing with visual tasks. In general, they exhibited poor organisational abilities and the arrangement of incoming sensory information is important for retrieval. Poor organisation quickly overloads brain storage capacity and hinders memory (Harris,1982; Merrill & Mar,1987). Information is more easily retained if preorganised (Lincoln et al,1985). Merrill and Mar(1987) state that the processes of sequential and simultaneous synthesis required in language coding are less efficient in retardates so that auditory processing is difficult. Ellis et al(1982) and Semchuk(1986) reinforce the view that rehearsal, repetition and organisation are lacking in retardates. Pictures are better recalled than words (confirmed also by the HAV) probably because the "imaginal" code is depended on and facility is not gained with the more abstract language code (Lamberts,1981). Varnhagen et al(1987) found short and long term auditory storage poor in retardates and felt it may be related to

echoic memory (ability to hear sound after physical stimulation has ceased) decaying more rapidly. Therefore, organisational and memory tasks are major difficulties for retardates but may be indicative of higher cognitive processing problems (Levine & Langness, 1985). Robinson & Robinson (1983) report successful intervention if processing is considered within the daily communicative context. Owen (1989) advocates cognitive process training in normal communicative environments and cites work by Scruggs, Mastropieri & Levin (1985) and Sternberg, McNerney & Pagnatore (1987) to support this. Brooks and McCauley (1984) specify a deficit (training absent processes) and prescriptive (facilitating processes needed) approach and state the second method is more contextually relevant.

Thus, the process model of cognition offers targets and techniques for intervention. Establishing an audit of processes is the first step in combining a cognitive and contextual methodology. The HAV study demonstrates the possibility of this and the findings are endorsed by recent studies in the field of learning difficulty.

Therefore the hypotheses: children with language disorder demonstrate differences in cognitive behaviour compared with normals on structured tasks designed to measure their information processing appears to be proved by the HAV study.



REYNELL ATTENTION CONTROL

- STAGE 1    Attention for task momentary/not sustained.  
              Distracted by new stimuli.
- STAGE 2    Rigid attention for own task.  
              No integration of other participation.
- STAGE 3    Single channel attention.  
              Needs help to transfer focus from task - directions - task
- STAGE 4    Single channel attention. Under own control, but needs time  
              to transfer directions to task.
- STAGE 5    Integrated attention. Can assimilate directions relating to  
              engaged task without interruption of activity.
- STAGE 6    Integrated attention well sustained.

CODE        0 - 3

0 = absent

1 = occasional

2 = fluctuating

3 = stable

## CHAPTER 6: A FRAMEWORK FOR PARENT/PROFESSIONAL COLLABORATION IN MANAGEMENT

### INTRODUCTION

This chapter focuses on parent/professional involvement in the opportunity group attended by the participants in the attitude study of the previous section. Research\* indicated that parents felt their wishes were not taken into account when decisions were made for children. There was a desire to become more active participants in the process. Thus, the relationship between parents and professionals is of paramount importance. People have different views, knowledge and experience of the world which influences their assumptions about others. They construct "models" in order to make sense of situations and guide action.

This section discusses basic processes involved in parent-professional interaction and describes a case study where theories are put into practice.

### THEORIES OF PARENT-PROFESSIONAL COLLABORATIVE RELATIONS

Cunningham and Hilton Davis(1985) have highlighted three possible models of collaborative practice derived from research into parent/professional relationships.

1. THE EXPERT MODEL exists when professionals view themselves as having total expertise in relation to the parent - taking control and making all decisions. Given that there is no attempt to involve parents, it is not surprising that they are reluctant to question the expert resulting in distorted understanding, high levels of dissatisfaction and non-compliance

(Lev, 1982). Dependency rather than competence is fostered in parents so increasing the demand for professional services and decreasing ability to cope at home. Parents believe they cannot help their child when the professionals need years of training and qualifications. Therefore, they have big expectations resulting in professionals feeling they have to act out the expert model at the expense of over generalising their own range of competencies. Parental dissatisfaction is increased when expectations are not met. Also by not eliciting the parental view professionals may consider the child from narrow perspectives missing important problems within the child and excluding those experienced by carers.

## 2. THE TRANSPLANT MODEL recognises professional skill and parent resources.

In this approach expertise from the professional is uprooted and transplanted into the parents. This method is well documented (eg. O Deil, Dessent, 1984) and is demonstrated in educational training programmes (eg. Portage) and exercises devised by physiotherapists for parents to use with cerebral palsy children.

To apply this model additional skills are required by professionals as they must be able to instruct others and maintain positive relationships with parents. This change in emphasis is likely to improve relationships and decrease dissatisfaction, misunderstanding and non-compliance. There is, however, a danger of ignoring the individuality of families and the diversity in aspiration, ability and view. Parents may not share the aims and values of the professional or have the resources to carry out tasks required. They are expected to comply with instructions and become competent in skills taught. Dependency on the expert is fostered and excessive demands can be made.

3. THE CONSUMER MODEL views parents as receivers of services. The parent, therefore, has the right to decide and select what seems appropriate. The professional acts as consultant and instructor within the framework of an acceptable agreement with the parent. The model acknowledges parental responsibilities to the child and the right to control decision making. The responsibility of professionals is to listen and understand the parental view and situation, provide alternatives to be evaluated and help effective, realistic decision making. This approach demands free flowing information exchanges and honest relationships. It accords an equivalent status in the relationship. Professionals are more vulnerable as their expertise is open to scrutiny. However, the model emphasises accurate two-way communication so that both sides will be aware of each other's expectations leading to higher levels of satisfaction and compliance.

The models differ in the extent to which they acknowledge the need for and seek to establish a collaborative relationship. In the expert model parents are responsible for seeking expert help and expect this to solve their problems. The professional takes control with minimal negotiation establishing no real partnership with the parents. The onus for success or failure depends mainly on the expert. The transplant model offers a partnership but places the parent in a junior role, dependent on the professional. Direct involvement in management places some responsibility on the parent for its success or failure. On the other hand the consumer model acknowledges parental responsibility, expertise and rights to control decisions. It depends on professionals having the training and resources to establish negotiated agreements.

However, the nature of the collaboration will vary according to the area of need. Dentists have the main diagnostic expertise for identifying dental needs but require the parent to be largely responsible for explaining treatment to the child and allaying fears. The expert needs to provide appropriate information for the parent and acquire knowledge about the child that might affect the treatment. There is a limited partnership signified here. On the other hand teachers require ongoing parental involvement for children with special needs in a joint educative approach that implies an equal partnership. Therefore, the model of practice will vary according to the area of need.

Models, of course, are merely constructs to help us understand events and are not indicative of an exclusive manner in a relationship. For example, some parents might be under great stress and actually want the professional to take charge. If tension reduces a more equal responsibility may be appropriated.

In any event, the partnership is largely based on the "complementarity of differences" between parents and professionals in regard to children.

(Katz, 1980; Newson & Newson, 1976). Firstly, parent functions are broader and more diffuse. Most experts have specific aims and defined limits (eg: speech therapists concern with language).

Secondly, parents have a greater number of interactions with the child in numerous situations offering wider perspectives compared with those derived from limited professional contact.

Thirdly, parents are more emotionally involved with intense feeling and



reactions to the child which may make their interpretations less objective than professional analysis.

Finally, parents have the major responsibility for the child urging them to advocate strongly on their behalf when necessary. Professionals may view parental demands as unreasonable.

Awareness of differences is important in constructing balanced views. Each person is actively involved in creating a framework that makes sense of what happens. Kelly (1955) has advanced a theory of personal constructs to explain this suggesting that human processes are channelled by the way in which events are anticipated. For example, a diagnosis of language disorder is a construct implying others such as difficulty in learning and socialising. Meaning and consequent behaviour result from the interaction of these. Obviously our own attitudes, knowledge and experience influence this evolving process. We respond to situations in the way we construe them. Relationships depend on how aware and accepting we are of other models (parent/professional/child) and the assumptions we make. In helping to develop this awareness some people find specific frameworks useful (e.g. personal construct/assumption grids, Cunningham & Hilton Davis, 1985). It is not intended to go into detail about these methods but merely acknowledge the importance of understanding the processes that underpin our ideas and actions in collaborative exchanges.

The parent attitude survey has reinforced the importance of these notions in adopting an acceptable framework for collaborative child management. A case study using these theoretical premises is now described and evaluated.

A CASE STUDY OF COLLABORATIVE PRACTICE

This study took place in the Opportunity group involving parents who completed the attitude questionnaire described in chapter 6.

The group began in 1972 responding to a need for day care facilities for handicapped children. It was set up by the local branch of Mencap and supported by Social Services. A group leader, volunteer helpers, physiotherapists as well as eventually a speech therapist (myself) and teacher were employed.

The arrangement operates on four mornings a week and caters for forty children, integrating able as well as handicapped from ages 1-5+ years.

When I joined the set-up in 1976 there were two physiotherapists and a nursery nurse (group leader) and 12-15 helpers. There was an individual approach to treatment, children being withdrawn from the playroom for sessions. Otherwise there was no specific approach to child development but opportunities for play and talk with helpers. Parents were not generally present other than at beginning and ends of sessions as the facility was viewed as a chance for them to have a break from child care. I was expected to fit into the existing pattern and any suggestions relating to change were not well received.

However, some months after my appointment a new leader (a trained nurse with a certificate in sociology) and physiotherapist were engaged. Both were prepared to consider changes and a meeting was arranged with parents and staff to discuss the situation and establish the consensus view. In general parents welcomed a chance to participate more fully in activities. They expressed bemusement regarding testing and treatment procedures and felt a lack of confidence in their own abilities to manage childrens development. Parents and professionals were in agreement that methods used for

assessment were too formal and remote from daily life to be a reliable guide to a child's status and potential. Although informal check lists were in operation none met with the particular needs of this group of children because they were not sufficiently detailed in earlier stages of development. Although most of the handicapped were 3+ years they were generally functioning below the twelve month stage, exhibiting social, emotional, physical and mental difficulties. The experts were happy to dispense with their individual testing and treatment programmes and integrate their expertise with that of parents for a shared model of management. I was appointed to coordinate these activities!

DEVELOPING THE PROCESS: A DESCRIPTION

Discussions with parents highlighted their need for:-

1. An approximate developmental guide on which to plot a child's performance and an indication of the age that various skills could be expected.
2. A system of Assessment that dispensed with numerical or alphabetic gradings comparing their child to a 'norm'. They felt that, since their children were often unable to experience normal situations, gradings stamped them unfairly.

This provided somewhat of a dilemma, because the parents sought some information with regard to normal development, with which to compare their own child's progress, but they did not want a FINAL score, such as an I.Q., which they felt could label unfairly and limit expectation of future development.

The developmental checklist appeared a working compromise, and was put together with the guidance of several experts - Speech Therapists, Teachers, Physiotherapists, Occupational Therapists and Orthoptists. We sought advice, mainly from practitioners used to WORKING WITH children, rather than diagnosticians who just had responsibility for testing. In compiling the schedule, I visited The Leicester Royal Infirmary Child Development Centre, who favoured informal test procedures, as well as Addenbrookes Hospital and the Applied Psychology Unit at Cambridge.

The age norms for different skills, were based on the Opportunity Group's professionals' view, from personal working experience as well as consultation of the literature. Since the Opportunity Group had normal as well as children with developmental problems attending, we were able to use these as a control to measure age appropriateness of skills. The check list underwent several revisions due to working experience and the final format, based on five year's use is in the Appendix.

There was a feeling that it was necessary to code behaviour, in some way, to observe the possible range and so a 0-3 (absent - stable) system was established thus:-

0 = absent

1 = occasional

2 = most of the time

3 = stable

Obviously terms such as OCCASIONAL and MOST OF THE TIME are loose and subjective. OCCASIONAL might refer to once a week or once a day, but at this stage there was the feeling that too precise a target might mean too fixed an interpretation of behaviour. We urged people to fix their own limit and only later come to a group consensus on terms and their precise meaning when working experience had been gained.

The same philosophy underpinned the whole schedule, as it was felt, in many areas, it was impossible to fix target behaviours, that would initially be appropriate for all children. For example: - the Social Skill area - 'understanding sharing', may be observed in an infinite number of ways, and to specify would exclude individual experience. Users of the schedule were encouraged to specify individual behaviour where appropriate. If enough behaviours were common to all it would later be possible to define more objectively. Seven skills areas were selected as appropriate to the group and individual context.

These comprised:

PERSONAL : SOCIAL : VISION : MOVEMENT : HAND SKILLS : THINKING : LANGUAGE

Much interprofessional and parent discussion occurred regarding the schedule composition. Other Parent/Professional Assessment and Management Schemes were reviewed. These were the Kith and Kids scheme (Collins and Collins, 1976), where parents took the lead and professionals helped in



programme planning, to the Parental Involvement Programme (Cunningham and Jeffree, 1975), where parents learned how to use materials previously devised by experts. Other approaches studied were where parents had been introduced to behaviour modification techniques (Miller, 1975) or trained at home, through Home Visitors, to carry out specific activities (Weber et al., 1975).

Studying other people's experiences is a valuable introduction to the issues involved. Each situation is unique, however, and it is better to develop one's own model of working, rather than adopting one from elsewhere, which does not fit all requirements. We found that no other scheme met our need for very detailed skill information in areas of feeding, vision, hand and body movements. To meet our requirements for information our initial schedule was comprised of 23 sheets. With use, however, this was refined to 6 pages, without seriously reducing the information required, but making the charts a more manageable proposition. As the schedule demonstrates, there is weighting of information in the 0-12 months age range, as our children were functioning generally within this developmental area.

The charts were used for plotting a profile for a child, and the appropriate code was recorded on the right side of the form with the date. Further checks and recordings were carried out each month.

Everyone involved with the children was invited to Workshops designed to introduce the Assessment and consider issues involved in observing and managing children's learning. Much of this time involved us considering our own learning strategies with regard to certain set situations. eg. learning a matrix of numbers. The discussions that evolved from these demonstrated the widely different learning styles and information processing strategies of the participants. Some spotted the matrix was a 'magic square', and remembered the numbers according to the pattern. Others 'chunked' the number information, or compared it to number sequences they knew (eg. Bob's telephone number, Sue's

house number etc.) There were as many different learning strategies as there were people in the group! This usefully served to raise consciousness about different ways of learning and, therefore, different ways of teaching young children. Wallach and Miller (1988) provide a review of these issues. Follow up activities were suggested for the children, involving some problem solving element. eg. a box with a lid and something attractive inside, for removal. The workshop participants were encouraged to go away and observe children's reactions and responses to a range of materials, for reporting back to the group.

Thus, we hoped to become more skilled in observing children's responses, sensitive and supportive to learning needs and perhaps less structured and interfering in our own styles of approach.

It was, however, felt that in certain areas, quite structured and targeted help would be necessary for some children. For example, many of the children had very poor body tone, which resulted in slow development of all body movements as well as poor breathing patterns and reduced oxygenation of the brain. Our Physiotherapist had been experimenting with wide elasticised bands, attached to the thighs, on the basis that resistance helped to strengthen movements for crawling. Resistance is part of the thinking of P.N.F. Theory (proprioceptive neuromuscular facilitation) based on the principle that intensive sensory input and the proprioceptive feedback from facilitated 'normal' movement patterns are most likely to result in an appropriate motor response. By 'intensive sensory input' is meant a daily use of procedures (Rood, 1961). In this context, RESISTENCE is the application of pressure, (elasticised bands) in opposition to the movement required (crawling), in order to strengthen that movement. It is used to strengthen the movement, where a person is capable of some degree of unassisted movement of the relevant muscles.

From my point of view, as a Speech Therapist, one of the most practical problems is improving the LEVEL OF BREATHING to sustain a sequence of

speech, and to strengthen jaw control for the development of swallowing and feeding. We, thus, experimented with elasticised bands applied to chest and jaw to strengthen and increase the range of movement. Although difficult to measure, and having no standard norms for comparison, we did attempt some recording on chest movement for inspiration and expiration. By using a tape measure, at the base of the sternum, we found an average increase of  $1\frac{1}{2}$ " (expiration - expiration) on 5 cases after a 6 month period of wearing the elastic straps during night-time sleeping. We did not have controls, so there is no means of assessing scientifically any improvements. It was, however, the general impression of everyone that learning accelerated with the use of resistance techniques.

These circumstances arose because the Physiotherapist and myself had been specially trained in P.N.F. techniques and mutual interest became the spring board of professional collaborative effort.

The use of the check list and the positive active involvement of many people with the children demanded, however, that target behaviours had to be set in priority order, for each category of the profile.

As an example, gross motor skills may be chosen, because mobility is urgent, specialised physiotherapy available and new methods of treatment ready for trial, as the above discussion, on the use of resistance techniques, demonstrates.

With one little boy, with Cri de Chat Syndrome, showing poor body tone, these techniques were used to improve jaw and swallowing movements for eating/speaking, rib movements for breathing, as well as leg movements for crawling and eventually walking.

Selecting the target areas depends on skills in another area being present. For instance, with the above child, at one stage we ascertained that he had the mental ability to progress in language skills, but he did not have the ability to attend long enough for training to proceed. We, therefore, introduced regular sessions to strengthen attention

control, using a buzzer and peg board. Everytime he heard the buzzer (behind a screen) he had to place a peg in a board. It, therefore, becomes necessary to consider competing behaviours and approach them first. Often the target area (eg. eating) cannot be taught in its entirety, and has to be broken into component behaviours and taught in small steps. A child cannot progress on to phase 2 feeding (see check list), using up/down and around mouth movement, until lip movements are strong. These may have to be specially worked on to encourage the development of the next phase. With certain skills we found it necessary to define the area clearly in behavioural terms. We discovered this approach was useful in considering eye movements and gaze patterns, which were particularly poor in these children, and vital to learning about objects and later attaching the name label. For example:

When seated at a table, on which is placed a moving object (eg. clock work toy) the child will follow it for 5 seconds.

With this sort of target behaviour a counting procedure was selected, for assessing the rate of gain. eg. number of seconds. Time and frequency of counts was decided before recording on a tally sheet, made up for every calendar day. Pre-treatment/teaching counts were essential and 5 counts used as a baseline to reflect the effects of normal environment. The criteria or objective is decided on. eg. follows a toy for 5 seconds on 5 tally counts. Training, therefore, ends when the objective has been achieved.

This sort of approach proved a real motivator for a little quadraplegic girl, who had very limited movement and poor vision and was ,consequently difficult to interest. We started assessing her visual response to different sorts of objects. When we found one with appeal (a little clockwork mouse with jewelled sparkling eyes) we started on the programme for visual following of a moving object. Mother set up the tally sheets and derived great positive encouragement from the recording set-up, and seeing progress objectively for the first time.

As a result, family attitude changed dramatically, from being totally depressed and negative, to a strong positive, assertive approach in managing the child. After improving gaze patterns, it was possible to encourage the development of word/object links and increase understanding of the world around. Eye pointing was then trained to select an object from a group. Thus simple communication, and a route to learning were established.

Behavioural objectives, if used exclusively, can become boring and monotonous, and result in very adult directed situations. However, they are a tool that has application on certain occasions, and as long as facilitatory approaches, building on the child's interests and needs, are also applied, such techniques can achieve useful skills.

We found they were a logical step in considering the information from the profile and setting priorities dependent on:-

1. The areas of severe involvement.
2. Behaviours that can be dealt with in home/group contexts.
3. Behaviours important for future development and necessary for the improvement of other skills.

Nevertheless, it was fully realised that many skills had not developed because experience of the world had been much more limited than in the case of most children. This was due to factors such as limited mobility, family stress, lack of appropriate financial and time resources, and fear of social rejection. Each child, therefore, was assigned a regular helper who had responsibility for taking the child out and involving him/her in activities of shopping, preparing food and drinks, as well as play sessions with an emphasis on fun.

Within the group, itself, there was a basic framework of activities including indoor/outdoor large equipment play, music sessions, cookery, painting, craft, table activities (jigsaws, games etc.) and a motor balance group devised by the Physiotherapist to encourage general mobility skills.



Each child had a weekly/daily jigsaw session, when present needs and skills were discussed, targets planned and practised.

In addition to the child's activities, the Mothers had a 'Coffee Pot' ——— each Wednesday and arranged their own sessions, such as a make-up demonstration, tupperware party, bring and buy sale and, at least once monthly a professional speaker. This later became the spring board of a professional /parent group called L.I.N.C. (liaison of those involved in the needs of children), which is now extending activities to lobby Health and Educational Departments, to meet consumer needs more precisely with regard to children.

The professional/parent partnership, of the ——— Opportunity Group, is unique in my working experience. Experts, as a rule, find it easier to work in one to one situations, where professional and client have clearly defined roles and boundaries. In larger personnel networks, involving helpers, other Therapists, Teachers and Parents, problems of consultation, leadership and personal assertion have to be resolved if progress is to be made. People are used to working in hierarchically organised set-ups, where they can easily absolve themselves of personal responsibility and shift blame if situations go wrong. In an open net-work everyone has to be responsible and actively involved in decision making. Personal competence and judgement are, therefore, openly viewed and accountable. This brings greater personal stress and involvement, but more satisfaction and overall result.

This pattern of work is obviously easier in an independent organisation, such as the ——— Opportunity Group, where service policies of Health and Educational workers do not conflict and there is no differentiation of working status amongst individuals involved.

Bureaucratic systems dictate that some people make the decisions and others carry them out. Professionals, who wish to personally succeed in the system, must not question the authority of the decision makers. The principle of what is right and wrong for an individual client is,

therefore, easily submerged in what the system dictates. In the group, parents and professionals share equal rights and responsibilities, and initiatives have arisen from consumer needs rather than what the system prescribes. An important task has been the sharing of management which has given rise to their own developmental profiling system and Jigsaw programme emphasising integrated rather than separate schedules from the Health and Education experts involved with children.

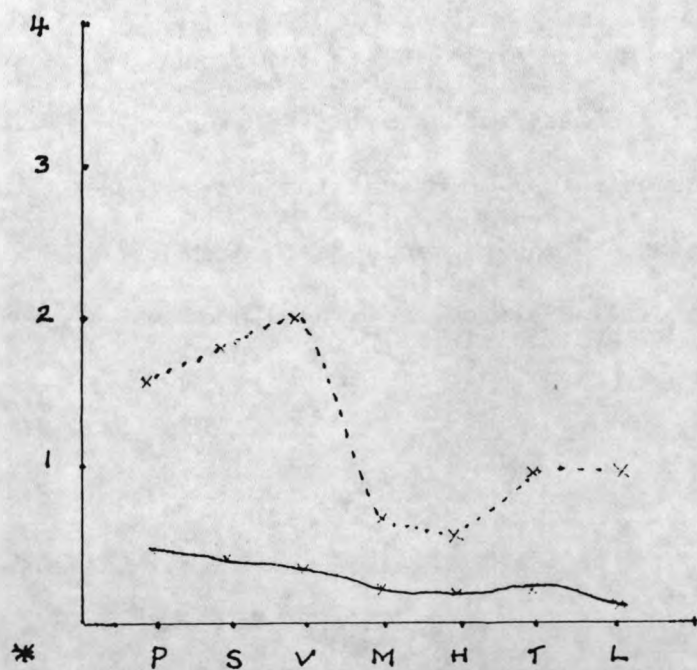
#### QUANTITATIVE EVALUATION

Although collaborative management appeared satisfactory for staff and parents did this make measureable differences to childrens performance? Making a study of this engenders problems. It is difficult to match such children on the wide number of variables that operate when comparing children s backgrounds. In the group itself, it would have proved unethical to exclude some children from the Jigsaw programme and put them under another regime for research purposes. However, the group organisation made it possible to make a study of two matched pairs and assess their rates of development in the areas covered by the Jigsaw assessment (see appendix).

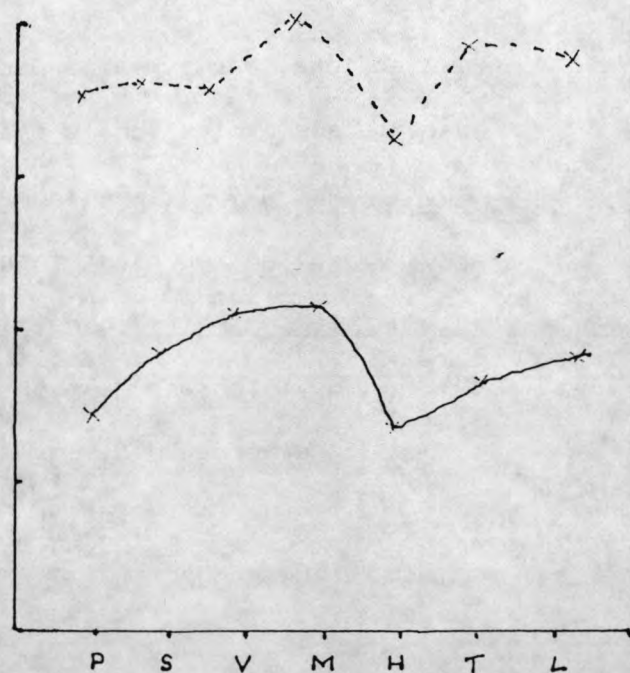
Parents in the group can opt for the Jigsaw programme with professional consultations or just avail themselves of the play facilities and continue with the statutory service provision outside. Most participate in Jigsaw activities but some feel they want to give their child a chance to play and forget about handicaps whilst in the group. They use the facilities for social reasons and obtain any necessary therapy/education in child health

A Comparison of base line scores with those taken 12 months later  
- on 4 children attending an opportunity group

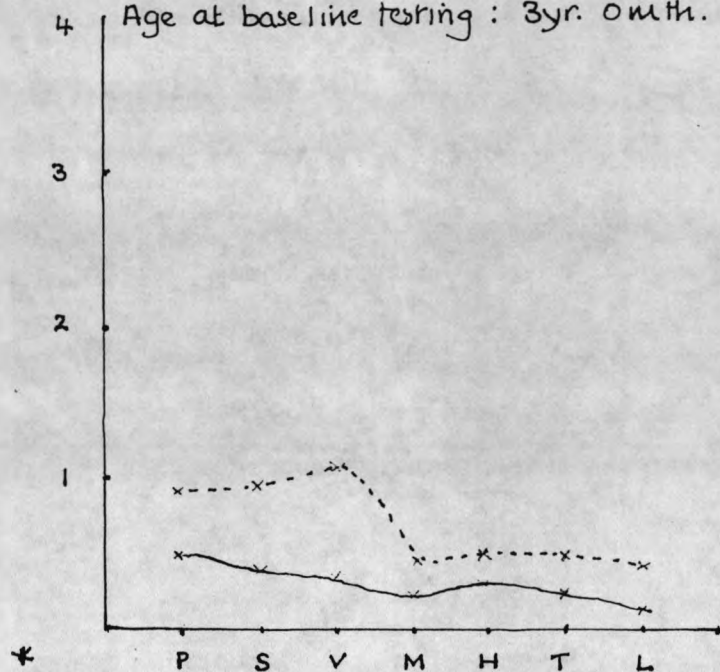
A (female) - Spastic Cerebral Palsy  
Age at baseline test: 3yr. 1mth



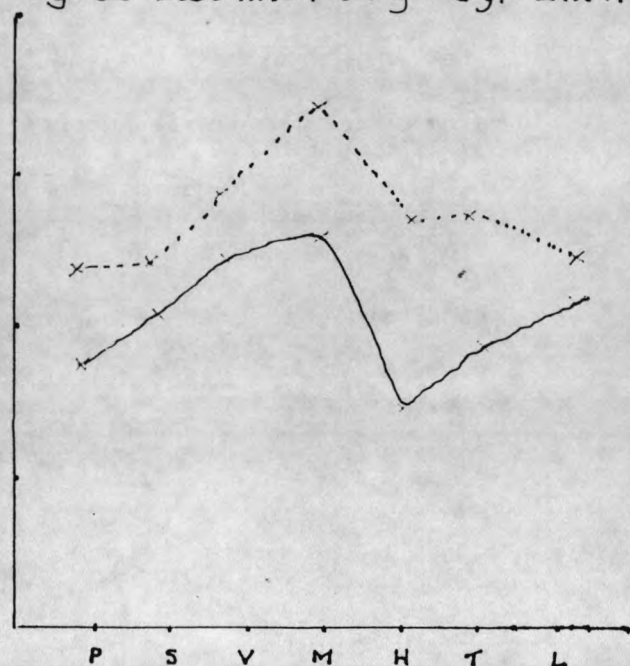
B (Male) - behaviour problem  
Age at baseline test: 3yr. 0mth



C (female) - Spastic Cerebral Palsy  
Age at baseline testing: 3yr. 0mth.



D (male) - behaviour problem  
Age at base line testing: 3yr. 2mth



Cases A and B received Jigsaw programmes within the opportunity group  
Cases C and D received programmes administered by a number of different professionals outside the opportunity group.

\* N.B P = Personal; S = Social; V = Vision; M = Movement; H = Handskills;  
T = Thinking; L = Language.

centres. Over time it was possible to compare two children receiving Jigsaw programmes with another pair attending just for play and continuing with therapy/education in the Child Development Centre. Progress was charted over a twelve month period and illustrated in Diagram 7.1

Cases A and B are children undergoing Jigsaw programmes whereas C and D obtained this support from outside statutory agencies. The Jigsaw pair demonstrate greater progress over the year achieving at a higher level although the patterns of profiles at both recording dates are similar for each pair (A/C; B/D). The children were matched for age, type of problem and socio-economic background but not for mental ability. Statutory records were no help here as the children attending the group were difficult to assess accurately. In the group, itself, we did not put emphasis on mental testing as we regarded general response and motivation to be more important in the fight for greater independence. Also, the professional input to each pair involved a different set of professionals so that personality, personal competences and collaborative frameworks were not standard. These variables could be more important than the method used for management.

However, we can state that collaborative management schemes have benefits in sharing knowledge and expertise and developing common starting points and integrated approaches for dealing with children with special needs. Such programmes demand shared decision making and responsibility and a positive will to adapt to circumstances so that a child's particular needs can be met. The data presented proves this can be an effective strategy showing increased levels of performance which were generalised in all known contexts.



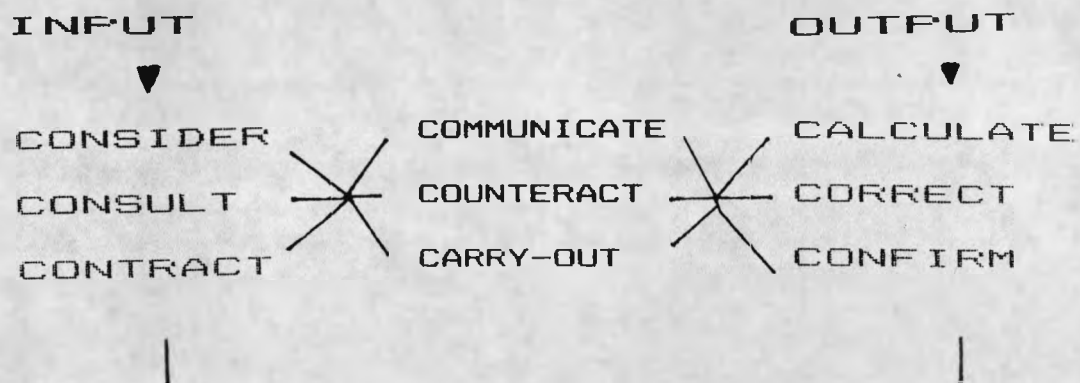
As a result of this approach parents gained noticeably in confidence and assertion running training days and lobbying local officials to articulate their needs. Their role became more active and because such exertion grabbed local and sometimes national newspaper headlines they were able to put greater pressure on the authorities than professionals were able to do. The experts have decreased power in this consumer model but all felt their work was much more effective as a result. It has motivated them personally and professionally and all have gone on to write books and articles and achieve higher levels of training. For example, the group leader has now almost completed a four year honours degree course.

The next section will attempt to analyse the collaborative process and extract its developmental stages and essential components.

#### ANALYSIS OF THE COLLABORATIVE PROCESS

The previous personal journal allows a critical review of the parent/professional collaborative process. This is summarised below in an input-output model and diagram 7.2 gives an expanded version of this.

#### COLLABORATIVE PRACTICE





Through out the journal presentation three components underpin the developmental process and are:

1. COMMUNICATION giving opportunities for participants to talk, listen and share views.
2. COUNTERACTION achieving a balance of perspectives and a compromise of views.
3. CARRY-OUT strategies that allow development to operate demanding a commitment to change, and personal motivation.

These elements are core to each developmental stage.

1. PRE-OPERATIONAL STAGE: INPUT-CONSIDER:CONSULT:CONTRACT

CONSIDER the existing context as the prelude to possible action (eg: parent/professional discussion). In a group there needs a core of individuals who view change as necessary. In the Opportunity group this demanded a change of leader and main professional (physiotherapist) setting conditions where others around would be attuned to expect some changes. Therefore, considering the context and acknowledging possibilities for reform precipitates the next stage.

CONSULTATION has to take place with other participants to find out other views. This may start out as an individual seeking out one or two others to validate an opinion (I did this with the new group leader and physiotherapist). Any wider public airing at this stage might have led to

cognitive dissonance if there had been massive rejection! The preliminary validation fortified intentions which carried strength when setting up the parent/professional consultation meeting. This occasion led to some polarisation of views expressed (two helpers were strongly in favour of the status quo). However, the majority opinion was for change so expressing a group norm and a public validation of it. Group pressure helped to modify the views of resistant helpers who had it reflected to them that they could opt to be involved with elements of management that needed no change. An example of this was the mid-morning break-time routine which the two helpers were invited to take charge of and were happy to agree. Thus, negotiation and compromise are essential and the group has to acknowledge individual ideas as well as legitimising majority views (group norms). The validation of a group view is part of the formation of the social dynamics - the force that works to maintain the pattern of activity decided on (goal). At this stage the group must show willingness to adapt and interrelate.

CONTRACT with each other is the final stage of the input. sorting out roles and responsibilities that will lead to planned goals (eg: Jigsaw programmes). My role was to coordinate the activity. Roles have to be clarified that have relevance to the people concerned. This stage completes the input for change and activity and the output cycle commences.

#### THE OPERATIONAL STAGE: OUT-PUT-CALCULATE: CORRECT: CONFIRM

CALCULATE the group activity in a regular way in order to be aware of what is happening. Monitoring and evaluation of outcomes took place at an informal level (spontaneous discussion) and formally by means of recording

on assessment sheets. Regular workshops to examine ourselves and our performances strengthened the process.

CORRECT procedures have to be established so that monitoring leads to adjustment strategies. This happened constantly in compiling the assessment forms and achieving a workable progression of activities. For example, we found it necessary to readjust our stages in hand function which led us to contact some American occupational therapists who had worked in this area and were able to advise us. Again workshop opportunities helped us to theorise, develop and make appropriate changes (eg. the elastic band treatment).

CONFIRMATION is the next process supporting each other's role and involving us as response partners providing feedback on our own input.

Such a developmental process needs the support of all participants who must communicate, cooperate and allow themselves to be accountable. Criticism was initially hard to take in this more open working network but since we all had our measure of it was eventually accepted.

Problems of operationalising ideas occur and discordant elements may be dysfunctional and disruptive to the general atmosphere. There was criticism from outside agencies suggesting that therapists were diluting expertise and acting unprofessionally by allowing parents to be involved in assessment procedures. However, the strength of the group kept the process functional. Personality characteristics of individuals cannot be underestimated in attaining a positive, creative environment in which to work.

Therefore, collaborative practice can be viewed as a series of stages involving in/out out features. The framework helped us to identify important variables and ensure that all the processes were treated as important. For example, continual confirmation and support of each other's role was seen by some to have little emphasis until a discussion on negative and positive comment changed their views and made participants understand that if you made good points before expressing bad ones this brought forth better responses from people. Description of the the Opportunity group activities supports this analysis and constructing the model helped us to identify essential components in the enterprise embarked on. The two matched pairs provided quantitative evidence of success which may not have been possible unless the consumer model had been made to work. Being clear about targets and understanding the process that achieves them is the key to satisfactory outcomes.

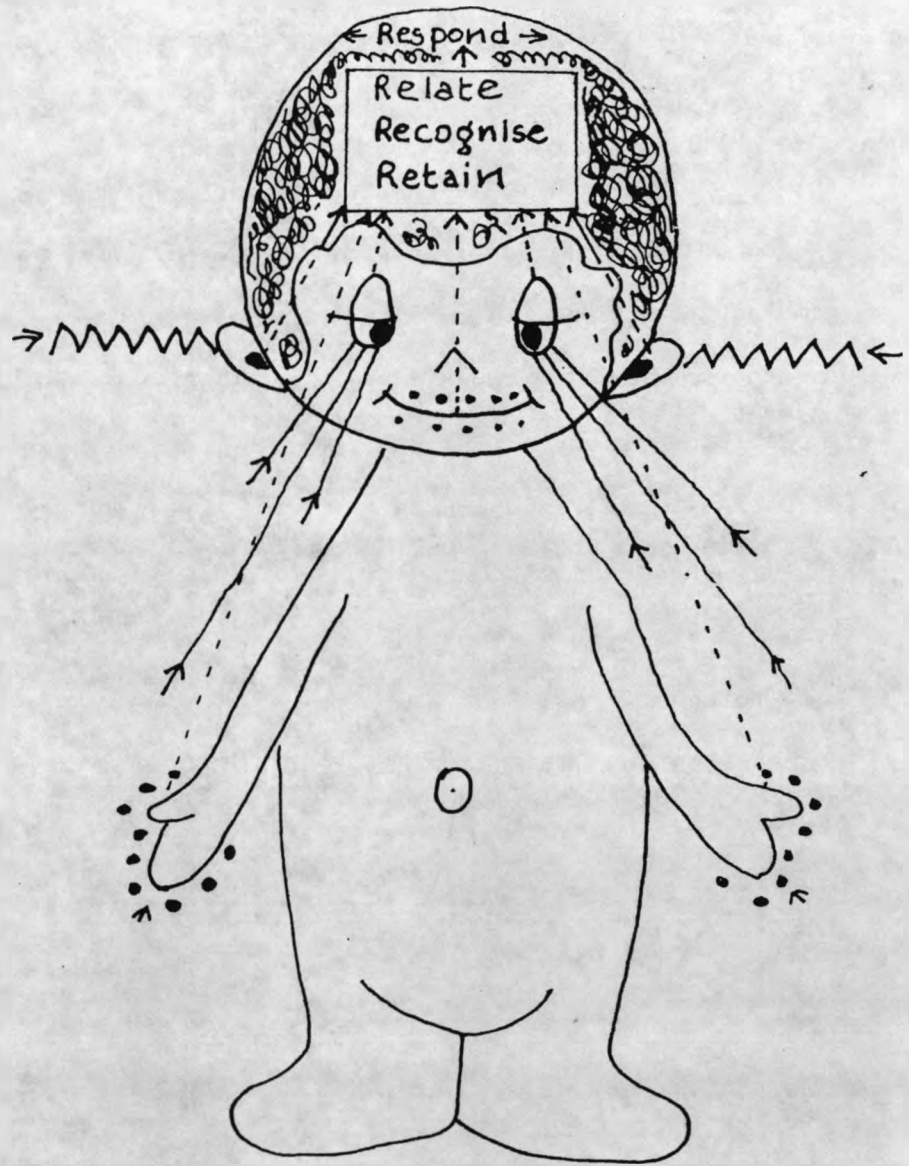
#### SUMMARY

There is a demand for successful management that aims at improving the independence and abilities of all handicapped people. Society acknowledges a right for every one to have equal chances to make the best use of their lives. The picture of recent years has been of rapid change. Higher levels of education and equal job opportunities for men and women have increased individual needs for higher standards. A wider range and better quality of health, education and social services is continually being wanted. The interdisciplinary, professional and agency relationships are increasingly complex and often conflicting. The situation is stimulating and challenging but often confusing and frustrating as individuals, services and systems

strive to cope with these greater demands on time and skill. The Child Development Team is an example of this, set up to rationalise professional time and expertise, in one setting, but finding it difficult to work together because of the differing philosophies and methods of its members. The attitude study of the previous chapter examined these issues in relation to child development team administration. This section has looked at the management of an opportunity group existing outside the statutory system and having none of the bureaucratic constraints of large government institutions. Provision, here, is able to be more flexible and can concentrate on fitting a system to the child rather than vice versa. It is easier for parents and professionals to become partners planning and working together for realistic, effective goals. Therefore, independent provision is to be encouraged working with state services to provide a wide diversity of provision to meet individual child and parent needs.



HOW CHILDREN LEARN — THE 3 R'S



LEARNING depends on :

RETAINING the patterns of information that travel into the brain from EARS, EYES, TOUCH/MOVEMENT.

RECOGNISING and understanding this information.

RELATING the new information to what is already known and linking the patterns of sound, vision, touch/movement.

UNDERSTANDING LEARNING depends on :

gaining information about how a child RETAINS, RECOGNISES, & RELATES information from EARS, EYES, TOUCH/MOVEMENT.

LANGUAGE GROUP ACTIVITIESApril 23 rd1. Cooperative Games

- a) Throwing/catching a beanbag to NAME
- b) Each child has a number. Call 2 numbers. Children change places.

2. Sense Training

- a) Touch. Passing round a ball, in a circle - showing children how to position hands for task.

Object Memory. Remove ball. Pretend to pass round the circle.

- b) Sound. Tray of small objects. Say a name with a sound omitted.  
What is the word? eg. da/y . daddy, /og - dog.
- c) Sight. Cut up picture cards to put together.

3. Story Drama

Peter and the Wolf. (use music)

April 30 th1. Cooperative Games

- a) Throwing/catching beanbag to NAME.
- b) Throwing a beanbag into a bucket. (team game)
- c) Numbered children change places when 2 numbers called out.

2. Relaxation

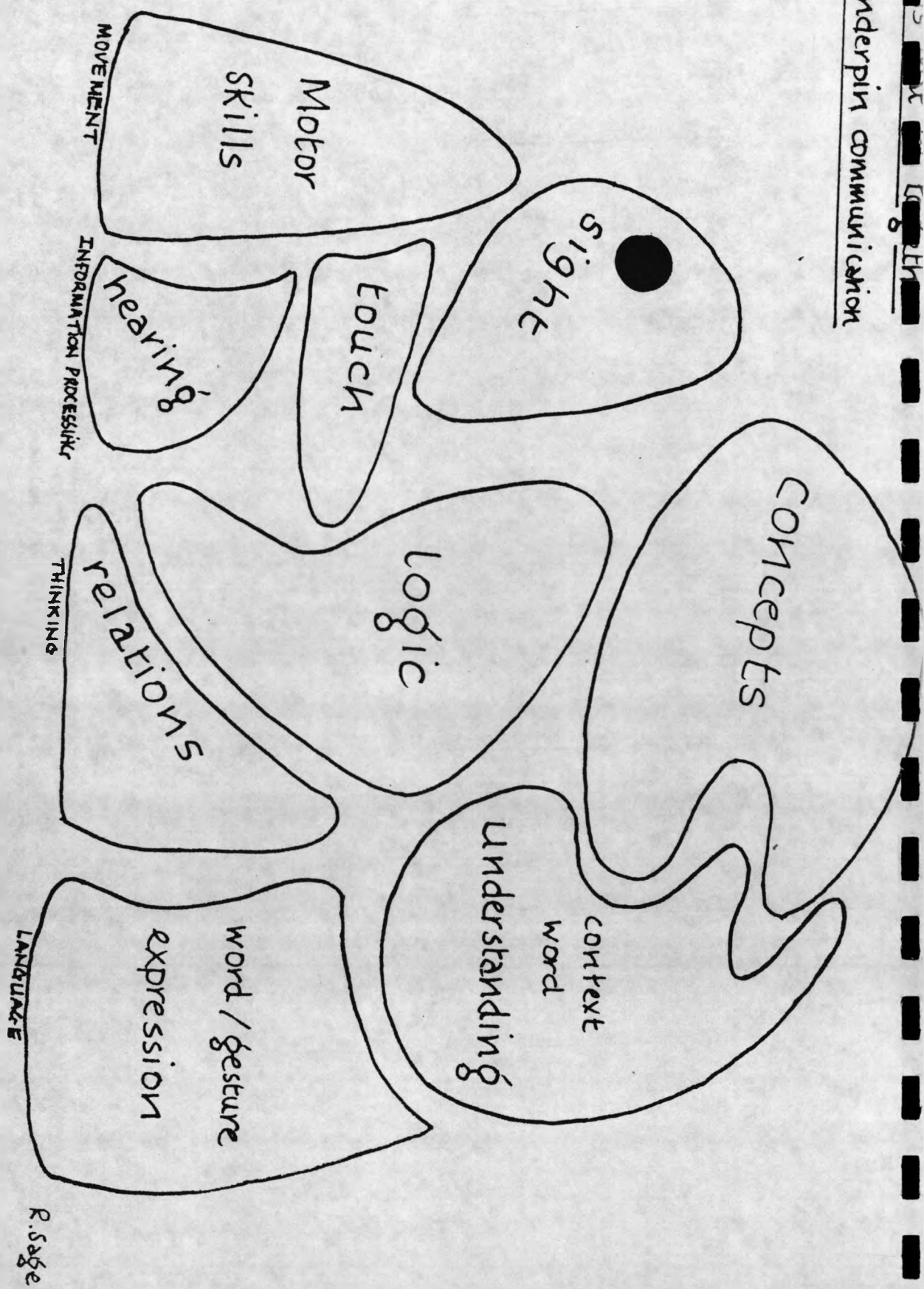
Learning to relax like floppy dolls. Learning to stand with weight correctly placed.

3. Sense Training

- a) Touch. Feel box. Pass round and guess an object when the music stops.
- b) Sound. Sound discrimination. 3 musical instruments placed in the middle of a circle of children. (chimes, bells, claves). I play 1 instrument behind a screen and, in turn, each child has to select the one heard. I play a short tune, the child copies on his/her instrument.
- c) Sight. Matching tasks with small counting toys.

4. Story Drama. The Enormous Turnip. (using models/masks)

to underpin communication

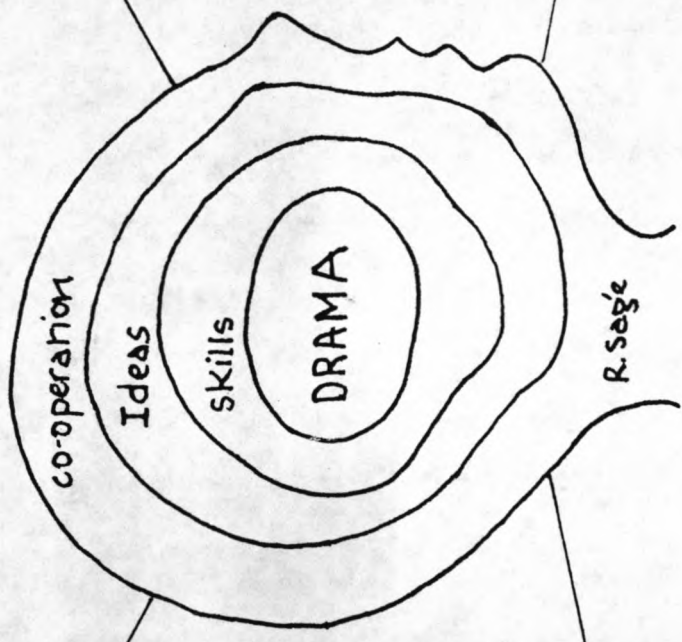


What is it

a process  
↓  
exploring  
↓  
ideas feelings  
↓  
using  
↓  
actions interactions  
↓  
situations social cooperation  
*forms of expression*  
speech .... mime .... movement

What is done

1. Competitive games
2. concentration/relaxation sense training
3. Skill development physical - mental
4. situations & activities role play/stories/rhymes



What you need

- ...ability to ...
- 1) Relax - respond
  - 2) Look, listen, feel → thinking
  - 3) cooperative sensitivity with others

What is achieved

- .... provides opportunities to ...
- 1) Make sense of self/world
  - 2) Think freely, test, solve problems
  - 3) See others view point.
  - 4) Develop self expression/confidence



## CHAPTER 7: THE COMMUNICATION STYLE DIFFERENCES OF ORACY & LITERACY:

### IMPLICATIONS FOR LANGUAGE MANAGEMENT

#### INTRODUCTION

This section focuses on the oracy-literacy shift marking the move from the informal language learned at home to the more formal and abstract communication of school. The relationship between spoken and written language is examined as the underpinning process to learning. Child/adult processing styles, levels of discourse and learning materials are discussed as a background to considering modes of intervention.

#### BACKGROUND ISSUES

This research is rooted in the oracy/literacy problems of children and the need to understand how language disorder changes over time.

This is important for three main reasons:

1. Language disorders persist through school years into adulthood (Bashir, 1986; Maxwell & Wallach, 1984; Snyder, 1982), needing continuous, consistent and cooperative management.
2. Difficulties become more covert as children get older. Bashir (1986) reminds us that "the problems of the language disordered preschooler may go underground, even seem to disappear for awhile, only to resurface in a different form, perhaps as a problem with classroom discourse".
3. Language disordered children are often relabelled learning/reading disabled, dyslexic or a variety of other terms as they move through school (Wallach & Liebergott, 1984). Bashir (1983) asks "Are we speaking about a group of children, who, by virtue of time and learning context, are called different names, but in reality evidence a continuum of deficits in language learning?"

Olson (1977) reminds us that the primary task of children entering school is making the transition from oral (utterance) to written (text) language.

Westby (1984) states that oral styles of communication are participant and



location oriented (contextual) whereas literate ones are removed from situations (decontextual). The oracy to literacy shift marks an enormous cultural change for a child. Home language is informal with meaning largely extrinsic to the words using context cues (facial & physical). School language is more formal with meaning intrinsic to the language (Olson,1977).Therefore, spoken to written language connections take place against a background of considerable changes in social/communication interaction for children.

It is,therefore, important for us to understand the relationship between oracy and literacy and consider the learning demands this makes on the child. This link will now be reviewed.

#### THE RELATIONSHIP BETWEEN SPOKEN & WRITTEN LANGUAGE

Diagram 8.1 clarifies the link between spoken and written language. Reading is a triple association of sight, sound and meaning. It involves:

1. Recognising and identifying letter symbols.
2. Mapping these graphic symbols onto speaking and thinking processes.
3. Understanding the words in their different sound, sentence and meaning patterns.

The complexities of the relationship existing between these three can be illustrated in the following example. We perceive printed shapes through our eye movements. These do not move evenly across the page in a left to right manner as we might assume. A hop and stop strategy is adopted involving sweeps and fixations(left hand side of diagram 9.1).

Rayner(1986,1988) has suggested these gaze patterns are related to levels of inference required by the text. Studies show that gaze patterns are longer following implicit antecedents.

A young child starting to read lacks experience of two-dimensional shapes, and needs larger size letters. This means that he/she cannot recognise 1-2 letters of printed size in one fixation. (Gaspar & Brown 1973). Since these are likely to have no meaning value they have to be translated into auditory perceptions for review at the next fixation.

An example of what occurs is seen in diagram 2.1 reading the word heather.

On the first fixation the eyes light on the graphemes 'he' which lead to the response hi, as this is likely to be an established auditory set 'he' in spoken speech.

The second fixation takes in the next 3 letters 'ath' which is likely to lead to reinforcement of the first response.

For the third fixation, on the letters 'er', the response/ə/ is a reliable auditory set for the final grapheme 'er'. The whole word response is, therefore, likely to be / hi:əə / which can only be modified if auditory sets are rich and contain the chain/hetə/ or the child has analogies weather/feather on which to draw.

Reading, therefore, is dependent on making the right links between letter and sounds.

Problems occur because of the inconsistencies of the letter-sound relationships, so that the child has to delay responses until larger units are scanned. Words are part of functional wholes and occur as part of an overall sound, sentence and meaning pattern. Understanding involves the recognition of words in their phonological(sound), syntactic (word arrangements) and semantic (meaning) patterns.

Let us consider these three areas in more detail.

#### 1. Sounds.

If we take the letter 'a' and examine it in several word contexts we can see that context is crucial for interpreting graphemes in terms of

phonemes.

e.g.                    - bath,    balm,    bar  
                         - bat,       ballot  
                         - ball,      ward  
                         - allot,    battalion  
                         - bathe,    save

some words are alike in form but have different pronunciations for different meanings. These are the homographs such as BOW ( bow, baw ) and row ( row, raw ). In homophones the reverse operates and we have the same pronunciations for different spellings and meanings e.g. fair, fare, thrown, throne - rose, rows, roes. The meaning of the whole sentence, therefore, is an important clue to correct pronunciation.

## 2. Sentences.

The reader needs knowledge of the language code pattern and word sequence arrangements. The appreciation of the basic subject, verb, object code and its transformations is important to the development of prediction strategies. (Smith 1971). Prior knowledge of how letters go together in words and how words go together in meaningful and grammatical sequences helps to eliminate unlikely alternatives and reduce dependence on visual information. Maximum advantage can then be gained from the limited amount of incoming visual information with which the brain is able to cope. The better idea we have of what we are looking for, the fewer distinctive features we need to discriminate.

## 3. Meaning.

Meaning emerges from prior expectations of the functions, relationships and meaning of words. The words: Open the empty bottle/empty the open bottle contain the same words in switched grammatical roles of verb/adjective. The same sentence, open the empty - involves considering

not only the grammatical function of words but their meaning possibilities in regard to their word relationships - knowledge of grammatical forms would lead to prediction of a noun following adjective.

Word experience leads to prediction of some sort of container (purse, bottle, box). "The empty bottle" implies the other bottle/s are partly full. Without semantic syntactic backup visual information could not be understood.

Internalised stress and melody patterns of speech underpin the process by indicating the grammatical functions. (e.g. rising tune = question - falling tune = statement) and conveying attitude and intention which confirm meaning e.g.

(a) word stress - present (1) 'present/(2) pre'sent according to overall meaning of sentence - (1) What a lovely birthday'present .

(2) May I pre'sent you to the Queen?

e.g. (b) I am an 'English teacher/I am an English woman).

I am an English 'teacher./I am a teacher of English).

It is easy to see, therefore, that if spoken skills are not realised there will be insufficient knowledge of the basic patterns of sound/stress/melody/sentence structure and meaning on which to map the activity of reading.

Reading, therefore, draws on patterns learned in spoken language and involves the integration of information through auditory and visual channels.

#### The Significance of Haptic Processes in letter recognition.

The business of dealing with letter shapes does, however, depend on other development. Coping with letter orientations depends on strategies for dealing with things in space. (Bryant 1975). Ability to perceive the orientation of objects in space in relation to self depends on haptic information. This includes tactile (touch) Kinesthetic (sense of perception of movement), somesthetic (body sensation) and neural processes (perception

of body in relation to objects and space). A child must first be able to relate himself in space before he can code the relative positions of other objects in space. This is particularly important for letter shapes which are similar but have different meaning according to orientation, e.g. p, q, g, b, d, un, lj, m, w, n, z, hy, t, f, etc. This can be illustrated by taking the letters d, b, which are a mirror image of each other. The child's strategy would be to code the straight line and then the bump to the right of oneself for b and to the left of self for d, as demonstrated in the work of Reese (1968). Bryant's (1974) experimental work supports the theory that young children rely on relative codes that depend on external frameworks, which they use inferentially in order to remember and learn from encounters. One way of remembering the orientation of the level of liquid in a glass is to note it parallels the table top and a way to remember the position of a letter shapes b/d is to relate to right/left of one's own body mid-line.

Tracing the relationship between spoken and written language suggests that primary language patterns must be established before the secondary skill of reading can properly develop. We will now look at evidence suggesting that early language delay leads to written language difficulty.

#### A possible continuum of language disturbance

One might assume, from the introduction, that there is a continuum of language disturbance, seen initially in the acquisition of spoken language and later revealed as deficits in the secondarily acquired language achievements of reading and writing. Obviously spoken language and written language are not the same. Speech is often hesitant, less sophisticated in form, with high redundancy. Gesture, facial expression and intonation supplement its incomplete nature. Written language is more complete, complex and with lower redundancy levels. Print and speech, however,



are not different languages - they share a common vocabulary and the same grammatical forms - but they are likely to contain differing distributions of each, because they vary according to the purposes and audiences, for which they are intended. The two different forms of language, however, make different demands on the recipients. Spoken word dies the moment it is uttered, and makes considerable demands on short term memory to recapture what has been said. To bring meaning to spoken language, very often, all we need do is consider the circumstances in which an utterance is made. The phrase 'pass the sugar' demands little attention to the actual words - but more to the context of the situation in which they were uttered. Speech is essentially transient, in contrast to reading where the eye can move backwards and forwards through the text. Here, burden is placed on longterm memory, what we already know about language and the world to bring sense to the print. Not all spoken language, however, is of the everyday situationally verifiable kind, but abstract, argumentative and unrelated to circumstances in which it is comprehended. Olson (1977) claims that ability to understand such utterances is a by-product of our being literate. It is only from an experience in reading that we can make sense of this kind of spoken language.

Although spoken and written language are different modes, similar processes of prediction underlies the comprehension of both.

By prediction here, I mean the prior elimination of unlikely alternatives (Smith 1978). By minimising uncertainty in advance prediction relieves the visual and auditory system and memory of overload.

If we cannot predict we are confused. An illustration of this predictive process can be seen in the following:-

The boat sailed into the harbour and the sailors dropped the an-

If this sentence came at the bottom right hand page of the book we could reduce uncertainty about the remainder in the following ways:-

- 1) Turning the page and seeing how the word finished - i.e. using visual information

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2) Without turning the page one could deduce that the next letter is unlikely to be b, f, h, j, m, p, q, v, w, or z - as these letters do not occur after an in English. This is orthographic (or spelling) information. Hypothesis can be made about the word. It is most likely to be an adjective or noun, rather than another part of speech, when following the word -"the". This entails the use of syntactic (or grammatical) information. Finally we can consider eliminating certain words, not excluded from previous criteria, such as answer or anagram - because our knowledge of the word tells us that these are not dropped by sailors. The elimination of these alternatives involves the use of semantic information.

The four alternative sources - visual, orthographic, syntactic and semantic, provide overlapping information. Not so much visual information is required as if the word occurred in isolation, because the other sources eliminate alternatives. All four sources, to some extent, therefore, are redundant. The skilled reader, however, who makes use of the three other sources needs less visual information and can read more fluently. Redundancy, therefore, depends on prior knowledge. If prior knowledge is not available reading can be a slow laborious task.

Research suggests that poor readers (compared to good) are more dependent on context clues (Kamhi & Catts, 1988)

In spoken language, we also have syntactic and semantic information available. Visual information, of course, is not in orthographic form, but could be available from the context in which the utterance was made, e.g. the sentence may have a picture to supplement auditory input. Phonological clues are useful information, however, involving knowledge of the sound pattern of words, e.g. boat (consonant, vowel, consonant - c.v.c.). In reading, the lack of 1:1 grapheme/phoneme correspondence means that phonological redundancy is of limited use.

Spoken and written language, therefore, share common vocabulary and grammatical forms and are underpinned by a similar process of predictions, which forms the basis of comprehension of both. Can one assume, however, that all children with initial problems of spoken language will show problems

in written forms?

Studies of language disordered children give little help in pinpointing the nature of connections. Observations of a relationship between speech and reading difficulty is well established in the literature - Rutter and Yule (1973), Liberman and Shankweiler (1976) and is frequently observed clinically - Durrell and Murphy (1953), de Montford Supple (1980).

There is a growing need for this relationship to be more clearly defined, particularly in the light of Bradley and Bryant's (1979) work on the independence of reading and spelling strategies. They suggest that children rely primarily on the phonological segments in spelling and visual wholes when reading, so it seems important to consider speech and reading together in the language disordered population.

Studies of speech and language disordered children followed up and presented as surveys can give us little help as to the nature of the connection between primary and secondary language disorder, though this is stated. The report by the team involved in the National Child Development Study is a case in point. Peckham (1973) gives the figure of 10-13% of children seen at 7 years as having a degree of spoken language impairment as identified by teachers and doctors. This group was not homogenous and included language disorder, dysarthrias, and persisting developmental conditions involving phonetic substitutions. Sheridan (1975) gives the following summary of the group:

"The group as a whole came from lower income groups and the children were later members of large families. They had been later in walking and talking, were more clumsy, had more visual defects and demonstrated more emotional disturbance than the controls. Their performance in reading, number work, copying design, and 'draw-a-man' tests was below average. Provisional figures for the follow up at 11 years showed that more than half of the children were attending special schools or receiving remedial teaching".

The suggestion is, therefore, that one can account for reading difficulties at 11 years with many possible explanations and this data cannot reveal a causal relationship between early spoken language problems and later reading delay, especially if some of the early language problems were mechanical and only at the speech production level.

The same could be said of the study of Garvey and Gordon (1973). This attempt to carry out a retrospective study, taking a group of backward readers and looking back to their earlier problems, resulted in the pursuits of another large and heterogeneous group, through a variety of educational environments. The nature of the data was such that no inferences could be drawn as to the connection between the initial speech or language difficulty and the subsequent degree or kind of educational failure. A more closely defined study was reported by Strominger and Bashir at the American Speech and Hearing Convention in 1977. Forty children were selected from the clinic files upon the following criteria:-

1. Birth date 1965 - 1967.
2. 5 year old or younger or first visit to the Speech Therapy Clinic.
3. Language delay or speech intelligibility as major complaint.
4. Normal hearing and intelligence.
5. Absence of gross emotional problems.
6. Absence of gross neuromuscular disorder (e.g. cerebral palsy).
7. Absence of seizure problems.

These subjects were given a battery of verbal and non-verbal skills including reading assessments. The authors did not report specific connections between spoken and written language but supported the concept of a continuum of disturbance on the basis of the primary data and the results of their testing. They suggest that children who fail to acquire adequate spoken language will have difficulty in the acquisition of secondary language systems "because of general problems posed by grammar and its representations, regardless of form". One might assume, therefore, that children who fail to



acquire syntactic and semantic information at a level to support adequate patterns of spoken language - might possibly carry over these problems to affect prediction strategies in reading. Vogel's (1975) retrospective study of good and bad readers - which had well defined criteria and appropriate controls for such differences as age, sex and language background - discovered a 90% incidence of syntactic problems in the poor readers. These problems contributed significantly to difficulties in reading comprehension - the conclusion drawn was that if children were identified early enough it would be possible to prevent this learning failure.

Retrospective studies, however, cannot provide satisfactory evidence. If one followed children longitudinally, it could well be that many children with inadequate early language patterns did not have later reading and writing difficulties. Certainly the studies demonstrate a need to look more closely at the relationship between different types of spoken language problems and reading and spelling ability. There has been limited interest in this area, but a study reported by Robinson, Beresford & Dodd (1981) investigated spelling errors of children with phonological disorder. The authors found that these children made significantly more errors than control children matched for chronological age and reading ability. These errors, however, did not occur any more often on mispronounced words than on correctly pronounced words. As many errors on regular as irregular words were made, which is not a 'normal' pattern. The conclusion made was that phonologically disordered children were highly dependent on orthographic patterns for spelling and had difficulty in generating phoneme-grapheme correspondence.

In the area of reading, several studies suggest that there can be a dissociation between visual and phonological strategies. Seymour and Porpodas (1980) and Snowling (1980) have argued that reading retardates have specific difficulties with grapheme-phoneme conversion, so that for them an

increase in reading age is mainly attributable to an increase in sight vocabulary.

Turning to the articulatory ability of these children, Snowling (1981) showed that the variables of syllable length and consonant cluster complexity adversely affected the reading performance of the retardates, resulting in articulatory breakdown. It would, therefore, obviously be interesting to explore the reading performance of children with developmental verbal dyspraxia who are characterised by similar breakdown (Williams, Packman, Ingham and Rosenthal (1980) - Maculuso - Haynes (1980.)).

The problem of definition, however, arises. Acquired articulatory dyspraxia has been described as a motor programming difficulty. (Darley, Aronson & Brown 1975), but such a narrow phonetic definition is unlikely to apply to a developmental problem. The term developmental dyspraxia, in common use by Speech Therapists, implies a wider psycholinguistic deficit, including the phonological level of language. A study by Stackhouse (1982) investigated the reading and spelling of children thus defined with two matched controls - from normal and cleft palate groups. The results showed that the dyspraxic group - unlike the cleft palate group, were significantly different from matched controls on reading and spelling performance, due to problems in carrying out grapheme - phoneme conversions. Consequently reading progress was slower than that of the normal child. The qualitative differences between the experimental groups have theoretical and practical implications. Speech problems of a purely phonetic nature do not necessarily interfere with reading and spelling ability, although a cleft palate child may be vulnerable to delay for other reasons - such as absenteeism from school, because of upper respiratory infection or hospitalisation.

Although there is no hard empirical evidence - there is suggestion from studies of speech, reading and writing difficulties that primary language

difficulties of a psycholinguistic nature - leading to problems in acquiring semantic, syntactic and phonological information, may also be reflected in secondary language forms.

This has long been recognised by Therapists and Teachers working in specialised units. Pauline Griffith, (1972) at the John Horniman School for children with language difficulties, emphasises in her writing, the effects on cognitive, social and educational development of children's failure to develop language, and the need for early assessment and remediation. She states that "there seems little doubt that advances in children's medicine and a greater understanding of the nature of developmental disorders will make increasing demands educationally for language disordered children.

Therefore, our review now turns specifically to the educational context in order to widen our understanding of the learning needs of language disordered children.

## A BROADER PERSPECTIVE ON LANGUAGE AND LEARNING

Research and practice has provided information about the role verbal proficiency plays in learning (Ripich & Spinelli,1985;Wallach,1985;Wallach & Butler,1984;Wiig & Semel,1980b).Proficient language users have a variety of language and problem solving strategies available (Miller,1984). They learn how to modify and change them when necessary. Therefore, average pupils deal with the changing demands of the curriculum, and shift from learning to read to reading to learn strategies as they progress through school (Bashir,Kuban et al,1983). Those with language learning disabilities frequently have difficulty making the transition from class to class (Wallach & Miller,1988). Intervention needs to include suggestions for classroom and curriculum modifications as well as pupil language and learning style.

This section outlines some current views that provide a conceptual framework for the information processing principles that complement our focus on language and communication.

## GENERAL ORGANISING STRATEGIES

As a way of introducing processing styles consider figure 12(Miller,1984).

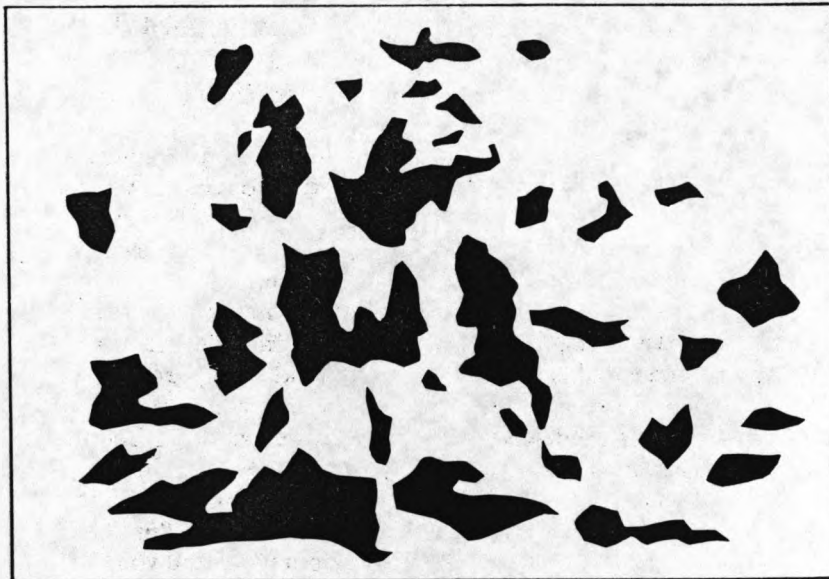


Diagram 8.2.

Answer 295

In trying to discover what the figure is some will attempt to discover a general outline in which to put the supporting detail. This is known as a top down strategy analogous to deductive thinking. Others prefer starting with details in a bottom up approach comparable to inductive reasoning.

Most of us have a preferred style and I have found in my teaching groups an approximate 50/50 divide. The majority of learning tasks demand elements of top down and bottom up processing. Getting the gist of a story is a top down process as is inducing pupils to tell/write about a topic requiring a narrowing down through various stages. Phonics, however, is a bottom up process as pupils must synthesise phonemes into whole words.

This indicates that pupils and teachers need to understand their preferred style. Top down learners teach in top down style whereas bottom up ones present information in data driven form. Matching teacher/pupil styles helps the learning of cognitive organising strategies.

Following from these ideas Gardner's "Frames of Mind"(1983) conceptualises human thinking and intelligence into a number of competencies:



LINGUISTIC: LOGICAL-MATHEMATICAL: MUSICAL: VISUAL SPATIAL: &  
BODILY-KINESTHETIC

These are integrated by "THE SELF": an amalgam emerging from awareness of ourselves as processors across domains. Gardner argues that the development of a sense of self is critical for social adjustment and learning function.

Related to these ideas are those of:

1. METACOGNITION processes for planning, monitoring and evaluating strategies for problem solving. Silliman (1986) describes declarative knowledge (know how) and procedural strategies for accomplishing goals.
2. METALINGUISTIC ability to reflect on language. Miller (1986) has organised a development frame showing that children acquire this competency at 6-7 years at the time when they shift from contextual to decontextual language (oracy-literacy).

These concepts help us to understand the classroom as a communicative environment and pose the following questions:

1. How does the teacher's/therapist's learning style affect the child's learning environment?
2. What types of teacher language facilitate learning?
3. How does the choice of materials affect language performance and learning?

THE CLASSROOM CONTEXT

As a bottom up processor I am aware of my propensity for hurrying students, by overwhelming them with information in the hope they will extract the relevant "gestalt". However, there are other contextual influences salient to language disordered children, beyond the efforts exerted on them by their teacher learning styles. These include the structure, content and function of language as used by teachers in the classroom.

#### DISCOURSE

According to Blank (1978) there are four levels of discourse that frame interpretations of teacher/pupil interactions.

LEVEL 1: MATCHING PERCEPTION encourages the child to focus on the immediate environment. The language is matched to the here and now (eg. "Give me the book").

LEVEL 2: SELECTIVE ANALYSIS OF PERCEPTION stimulates the child to focus on specific aspects of the situation (eg. "What colour is the pencil?").

LEVEL 3: REORDERING OF PERCEPTION demands the child thinks beyond the immediate context (eg. "Show me the ones that aren't red").

LEVEL 4: REASONING ABOUT PERCEPTION requires the child to think about what could happen (cause-effect relationships) (eg. "What happens to the buns when I put them in the oven?").

Blank argues that we must expose children to complex language if we want

them to acquire it and discusses the OBLIGE-COMMENT distinction in relation to disclosure versus demand (Blank & Marquis, 1987). Obliges (demands) require a pupil response (eg. "Why do broad leaf trees lose their leaves in autumn?"). Comments, however, are statements that do not require response (eg. "Broad leaf trees lose their leaves in autumn because they are perennial flowering plants with a growing, blossoming time and a resting period when foliage dies down"). The comment form exposes children to more complex language and ideas but does not place them in an immediate failing situation because they do not have to respond. Examples of less complex obliges are: "What are the names of these trees"? (from picture stimulus) (level 1); "What happens to broad leaf trees in autumn?" (level 3)

These ideas describe the child in a passive role but help us understand our own characteristics as learners and purveyors of information affecting language intervention choices and outcomes. Obviously teachers' expectations about what children know and the language they use to teach new concepts has effect on pupil performance. Silliman (1984) describes the language of schooling along four dimensions: general purpose, nature of comprehension activities, coding complexity and participant assumptions. She states that the general purpose of instructional discourse is the transmission of scientific or logically based knowledge. In contrast, the purpose of everyday discourse is the regulation of social interactions and interpersonal functions. This makes it socially salient with meaning inherent in the shared situation whereas instructional discourse is logically important constructed from what is actually said. As Nelson (1987) states, everyday discourse is more situated than instructional, which lacks rich contextual surroundings. Blank (1987) questions whether instructional discourse, particularly the dominant role teachers give to questioning,

meets demands of developing thinking. This points to a need for us all to be constantly aware of our own language behaviour with children.

#### MATERIALS FOR INSTRUCTION

Our knowledge of information processing, learning preferences and discourse is more sophisticated than it was at the beginning of the 1980s and has to be applied to the curriculum and materials presented to children to help them learn. Brannan et al(1986) remind us of our heavy reliance on commercial materials and that we should not assume they expose pupils to the structure and content needed. He provides examples from a reading passage (A) reorganised (B) using Stein & Glenn's story grammar elements(1979).

##### *Passage A*

In the grass was a little hill.  
On the hill was a little house.  
In the house was a little witch.  
On the little witch was a big hat.  
It was a hat that a big witch had lost.  
The big hat looked funny.  
It looked funny on the little witch.  
But the little witch was happy with the big hat.  
The big hat had big magic.  
With the hat on, the little witch jumped with grasshoppers, swam with ducks and ran fast with rabbits.  
Morning after morning, the little witch went down the hill.  
The little witch went to the pond to sing songs with the turtle.

Brannan et al(1986) assert that passage (A) lacks cohesion and plot structure making it difficult to process and recall. Roller & Schreiner(1985) provide examples of passages in narrative and expository style. Narratives are written with story formats that contain characters, events and consequences as seen in passage (B). Expository materials involve explanation and are more formal (eg. textbooks). Piccolo(1987)

*Setting:*

*Passage B*

The little witch lived in a house on the hills. She had a big hat. The hat was magic.

*Initiating Event:*

Every morning the little witch went down to the pond. When she had the hat on, she could jump with grasshoppers and run fast with the rabbits.

*Internal Response:*

One morning the witch wanted to swim with the ducks.

*Attempt:*

She had the big hat on when she went into the pond to swim with the ducks.

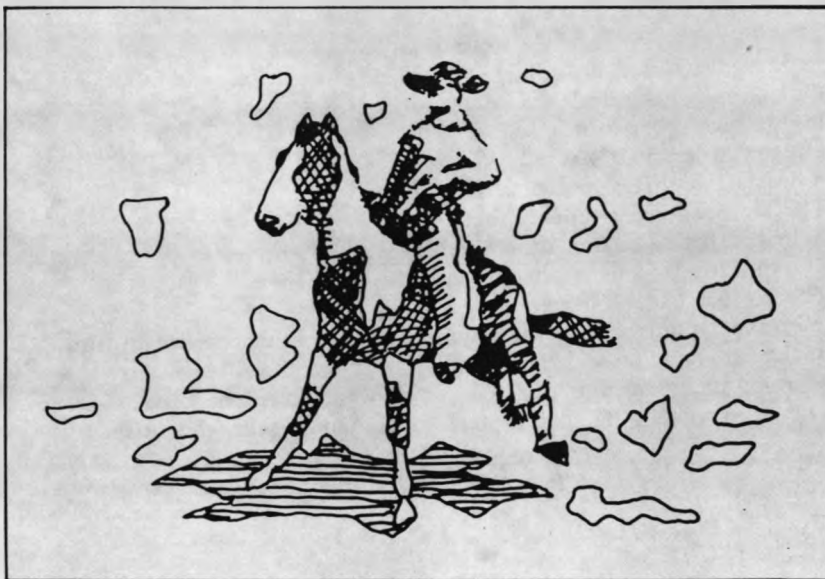
*Consequence:*

The big hat fell in the pond. She lost the big magic hat. The little witch was not magic without the big magic hat.

*Reaction:*

She looked for the magic hat, but it was lost. The little witch was not happy.

## Puzzle Picture Answer





states that expository styles may be difficult for children with language processing problems. We should, therefore, aim to heighten pupil awareness of text structure.

#### Comment

Considerable attention has been devoted to the connections between children's oral language development and acquisition of print literacy. Bennett(1986) cites that one of the strongest connections is the relationship between the style and type of language children hear from adult carers and later academic success. The best predictors of success in reading comprehension are frequency of having been read to and good oral language development. The oral to literate transition entails strategies for communicating beyond interpersonal dialogue. Children acquire strategies for understanding and using language in situations containing less context support, that require another's perspective, and are abstract in comparison with the cognitive demands of conversation. Children learn to handle discourse that includes unshared topics, involves being a spectator rather than active participant and is formal in structure. Westby(1985) describes this oral to literate shift in detail and a brief summary of his ideas is provided below.

Asking for something or telling someone to do something



Reporting a personal experience to a friend face to face



Writing a note to a friend



Listening to a lecture on an unfamiliar topic



Writing a report on a personal experience



Reading or writing an imaginative story

Narrative discourse is of interest as it appears to fall midway along the

oral to literate continuum

Westby(1985) stresses that narrative thinking exists in contrast to that required to develop understanding of the physical world (Gardiner's logical-mathematical and visual-spatial information processing). In this view, narrative thinking develops out of children's social interactions and constitutes their mode of thought about these until they develop a differentiated model of specialised kinds of discourse. Sutton-Smith(1986) argues further that the true meaning of children's narrative knowledge is in their performance. Thus, narrative knowledge is seen as an unfolding process that can be assessed through child play, relating and making up stories, engaging in show and tell etc. According to Kemper & Edwards(1986) these story events are organised into actions, physical and mental states linked through specific deeds and processes. They propose a developmental unfolding in child ability to express causality with the event chain model showing that 2-3 year olds use rudimentary causal expressions but it is not until they are six that narratives are "causally coherent in that they consist of a causally connected sequence of actions, physical and mental states that explain the antecedents and consequences of characters actions". This stage, therefore, corresponds to the oracy/literacy(contextual/decontextual) transition period.

#### Summary

This chapter has focused on the oral to literate shift and has exposed much relevant research in this area. Styles of information processing and discourse are important to match between child and teacher if successful education is to occur. The materials of instruction are also vital elements in learning and we have been reminded that much published material may not meet a child's structure and content needs. Children bring to school levels

of communicative/cognitive competence and other metalinguistic/cognitive abilities. As practitioners involved in teaching children our task is to understand the numerous possibilities that affect language and learning success. Also of importance is the child/adult (parent/professional) motivation and commitment to monitor and sustain the learning activity. Children must want to learn and adults be keen to help them. Although obvious, we do not always deem it necessary to fully consider what inspires and assists these collaborative enterprises. Fundamental is the belief that both can be successful. There has to be reward, support and evaluation to keep on track for goals.

The chapter has briefly summarised some of the critical variables influencing language intervention decisions. This is in preparation for the next section which looks at case studies of different types of intervention.

## 2 Interview assessment scale

Band

9	<b>Expert speaker.</b> Speaks with authority on a variety of topics. Can initiate, expand and develop a theme.
8	<b>Very good non-native speaker.</b> Maintains effectively his own part of a discussion. Initiates, maintains and elaborates as necessary. Reveals humour where needed and responds to attitudinal tones.
7	<b>Good speaker.</b> Presents case clearly and logically and can develop the dialogue coherently and constructively. Rather less flexible and fluent than Band 8 performer but can respond to main changes of tone or topic. Some hesitation and repetition due to a measure of language restriction but interacts effectively.
6	<b>Competent speaker.</b> Is able to maintain theme of dialogue, to follow topic switches and to use and appreciate main attitude markers. Stumbles and hesitates at times but is reasonably fluent otherwise. Some errors and inappropriate language but these will not impede exchange of views. Shows some independence in discussion with ability to initiate.
5	<b>Modest speaker.</b> Although gist of dialogue is relevant and can be basically understood, there are noticeable deficiencies in mastery of language patterns and style. Needs to ask for repetition or clarification and similarly to be asked for them. Lacks flexibility and initiative. The interviewer often has to speak rather deliberately. Copes but not with great style or interest.
4	<b>Marginal speaker.</b> Can maintain dialogue but in a rather passive manner, rarely taking initiative or guiding the discussion. Has difficulty in following English at normal speed; lacks fluency and probably accuracy in speaking. The dialogue is therefore neither easy nor flowing. Nevertheless, gives the impression that he is in touch with the gist of the dialogue even if not wholly master of it. Marked L1 accent.
3	<b>Extremely limited speaker.</b> Dialogue is a drawn-out affair punctuated with hesitations and misunderstandings. Only catches part of normal speech and unable to produce continuous and accurate discourse. Basic merit is just hanging on to discussion gist, without making major contribution to it.
2	<b>Intermittent speaker.</b> No working facility; occasional, sporadic communication.
1/0	<b>Non-speaker.</b> Not able to understand and/or speak.

## 5 Oral interaction assessment scale

Intermediate Level (equivalent to Band 5.5 or 'L' score of 55 minimum)

<i>Size</i>	Can participate in a discussion with several people keeping in touch with the gist even if occasional lack of grasp of details.
<i>Complexity</i>	Can understand and discuss one or two major points and supporting details. Can make a firm point but disturbed by noise and distractions.
<i>Range</i>	Can describe and discuss implications of events, graphics and objects using a number of language skills and tones.
<i>Speed</i>	Will have breaks in comprehension in normal, rapid speech presentations and his own speech will be of less than native tempo for stretches.
<i>Flexibility</i>	Can cope with occasional but not frequent switches of topic and style of presentation. Recognizes when a different type of utterance, such as a joke, is being used, and changes his own style accordingly.
<i>Accuracy</i>	Does not seriously misinterpret overt meaning of utterance but not quite so ready to understand implied meaning. Uses language at his disposal accurately and aware of his usage limitations. Accent and sometimes usage is likely to be patently foreign.
<i>Appropriacy</i>	Appreciates major styles of presentation including some slang and regional usages, but can be puzzled by such deviations from the norm. Does not always use slang appropriately or adapt style of presentation.
<i>Independence</i>	Will not often have to ask for clarification unless presentation is unusually rapid or confusing. Can 'speak on his feet' but needs more recourse to preparation and notes than would a fully competent speaker.
<i>Repetition</i>	May ask for repetition if speech is rapid or extended.
<i>Hesitation</i>	Prone to more false starts and space-fillers than a fully competent speaker.
<i>Overall</i>	<i>A useful participant in a discussion or interview. Keeps in touch with main points and able to put over his own point of view but level of comprehension and fluency lies between Basic and Advanced level performances.</i>

CHAPTER 8: INDIVIDUALS & THEIR COMMUNICATIVE PROBLEMS: FOUR CASE STUDIES  
ILLUSTRATING INDIVIDUAL & INTERACTIVE MANAGEMENT APPROACHES

INTRODUCTION:

This section concentrates on the collaborative partnership between child and adults in the school context. Therefore, the contrast is highlighted between preschool and mainstream provision. Chapter 7 described an under fives opportunity group with equal parent-professional management. Such routine is not bound by legal requirements allowing greater freedom of operation. School practice is covered by Educational law which from 1989 establishes a National Curriculum and assessment programme. This ensures a tighter framework to operations. The parents' function is to support the enterprise rather than be actually involved in it. The partnership is a minor one compared to that in the Opportunity group. Therefore, major focus is on the professional collaboration of teacher and speech therapist working with children experiencing problems in language for learning. Four cases of child management in primary school contexts are described. Two children receive individual programmes based on results of formal tests selecting aspects of language form for targetted help. The other pair undergo an interactive programme with an emphasis on child needs for communicating successfully with peers, adults and learning materials in order to achieve academic success. The emphasis here, is on the quality of these relationships rather than on a specific learning programme arising from abstract theoretical premises and aims. Both approaches are discussed and evaluated.

BACKGROUND ISSUES:



Earlier chapters have discussed the theoretical models that underpin assessment and management procedures. Van Kleeck(1984b) has examined the strength and weaknesses of these. She points out that models relate to assessment and intervention in different ways. For example, the medical model focuses on aetiological and neurological correlates of language and learning disabilities and provides interesting information but has little to do with intervention. Assessment concentrates on measuring deficits (eg: the lack of phonological/syntactic skill) and management aims at removing these. In addition intervention encourages "taking a child out for treatment" which may not be appropriate for educational and social needs. Breakdowns in auditory processing and perception are frequently viewed as underlying the cause of the child's language problems (Wallach & Miller,1989) and intervention often leads to work on these symptoms (eg: auditory discrimination and sequencing). However, Blank and Marquis(1987) remind us that just because such signs exist does not mean that we should focus assessment and intervention on them.

With this in mind the present research has been directed at finding a way to integrate information processing principles with uses of language for socialising and learning. Such an approach demands observation of the contexts surrounding children with language difficulties and an understanding of the collaborative partnership needed. As this study came about largely because of the academic failure of this group the context of greatest concern has to be school.

#### THE CASE STUDIES:

Therefore, the question addressed in the case studies is whether

communicative disturbances should be treated as INDIVIDUAL or INTERACTIVE problems.

Other disciplines concerned with communication and cognition have shown interest in this question. In psychoanalysis "object relations theory" (Greenberg & Mitchell, 1983) is concerned with the growth of individuality out of interaction, recognising that it is relationships with others and with so called internal objects that build psychic structure (Alford, 1987).

Costall (1986) and Costall & Still (1986) proposed MUTUALISM which defines meanings as relations between individuals and their contexts. Philosophy discusses this under EXTERNALISM which McGinn (1983) explains as an approach to the philosophy of meaning.

Research in pragmatics indicates that communicative intentions and the force of its acts can be socially distributed and negotiated (Levinson, 1979; Edmonson, 1981; Leudar & Antaki, 1988; Leudar & Browning, 1988)

There has been increasing recognition in the past decade that radical individualism perpetuated in research and practice, as an approach to communication management, has failed. Two case studies illustrate an individualistic and two an interactive method of communication management in order to evaluate this situation. Some relevant concepts are initially outlined as a preface to an account of the studies.

Our pilot observation of children with communication difficulties in different situations reveals problems in all aspects of the process

involving language when data from dialogue is logged on a communication profile. These were:

1. SKILLS - the ability to produce phonologically correct words and grammatical sentences and use them to represent real/imagined experience.
2. DESIGN - the ability to produce utterances which are appropriate to the context and fulfil the speaker's aims.
3. FUNCTION - the ability to present self, maintain or transform social structures in communication.

Research has documented inadequate linguistic SKILLS of learning disabled individuals with developmental and cognitive correlates (O'Connor & Hermelin, 1963; Schiefelbusch, Copeland & Smith, 1987; Schiefelbusch, 1972; Mittler, 1978). Less attention has been paid to language DESIGN & FUNCTION with some exceptions (Price-Williams & Sabsay, 1979; Kernan & Sabsay, 1981; Leudar, 1981; Sabsay & Kernan, 1983; Turner, Kernan & Gelphman, 1984). This reflects the lack of status spoken language has received in our education system resulting in limited opportunities to develop these aspects within the curriculum and reflect on their function in learning. Now that both spoken and written language are assessed on age related targets in the new National Curriculum (1989) impetus is given to the study of these interactional aspects of communication.

Sabsay & Kernan's (1983) work is of particular interest in this connection. They have shown that an inability to articulate clearly results in increased frequency of "other initiated other-repair" (unprompted

Diagram 9.1.

PRINCIPLES OF COMMUNICATION: A SUMMARY OF VIEWS IN THE LITERATURE

GRICE (1975)

QUALITY: contribution that is true and backed by evidence

QUANTITY: contribution as informative as exchange requires

MANNER: clear, brief, ordered, unambiguous expression

RELEVANCE: response right for the occasion

BROWN & LEVINSON (1978)

FACE: social value claimed by a person in an encounter

POSITIVE FACE: need for appreciation by communicative partner

NEGATIVE FACE: need for freedom from arbitrary constraints

(power differentials alter face: eg. one would normally be apologetic in pointing out errors but a teacher will not when correcting a pupil)

LEWIS (1983)

PRINCIPLES OF THE THEORY OF PERSONS

CHARITY: beliefs & desires of another person should be the same as our own as far as constraints allow

RATIONALISATION: beliefs & desires of another person should provide good reasons for their behaviour

TRUTH & TRUST: speaker utters what he believes to be true & hearer responds by sharing belief (unless he already has it) adjusting other views accordingly

clarification/rephrasing of what another person has said) signalling a message of incompetence which affects self image and dependency in communication. Brewer & Yearley (1986) comment that an individual may cooperate in their own stigmatization. Goffman (1986) discusses this further saying: "Those who have dealings with him fail to accord him respect and regard". Leudar, Fraser & Jeeves (1984, 1987) identify communicative withdrawal as a way of asserting personal autonomy so resulting in a deepening of the social problems.

Thus, it is through the interaction of the three processes of communication that actual disorders are produced. The individualistic perspective has reified these locating problems in persons themselves and assumed they result from lack of skills. Of course they often do lack skills to allow effective and conventional expression but they also lack opportunities. Individualising communicative disorders overlooks the fact that their problems are remembered by audiences and so produce a non-standard context. The aim is, therefore, to establish principles to describe communication situations and apply them to the cases under investigation.

#### PRINCIPLES OF COMMUNICATION:

Diagram 9.1 provides a summary of three views in the literature regarding principles needed for effective communication. These are based on three major concerns of contemporary pragmatics.

1. INTENTIONALITY: The speaker's responsibility is to express their communicative intention whilst the hearers is to attribute it correctly. Meanings of utterances in dialogue are not the same as their sentence



meanings but correspond to the speakers purpose in saying something. The utterances are successful as communications if their purpose is recognised. Thus the intentional aspect of meaning is useful when analysing communications of language disordered persons. Although language skills are affected they are able to communicate because clearly articulated and grammatically correct speech is not necessary for conveying communicative intent. The following exchange between Tom(case B) and the class helper illustrates this:

Helper: Tom, what do you call this flower?

Tom: erfle

Helper: thistle?

Tom: mhm

The helper restates Tom's word because at this stage she is not clear about the intended meaning and Tom appears to confirm that this was the one he was trying to say. Although he could have been repeating "flower"(prosody = \ ) the intonation pattern resembled that of "thistle"(prosody = \), Therefore, communication was possible even though the word was not clearly articulated. However, there is a price on not being explicit as a pattern of validation is established.

Helper: Who's going with Mrs Sage today?

Tom: Mark and Anna

Helper: Mark and Anna (falling inflexion-i.e. "yes"(prosody = \) not "are you sure?"(prosody = /))

Thus partners of language disordered children often echo utterances with

clear meaning. Speech Therapists use such modelling processes to signal to a child the correct target required but there are negative consequences in foregrounding each communicative intent with a signal of incompetence.

2. CONVENTIONALITY: The rules of conversation eg. turn taking, response relevance. Children with language problems do not always apply these rules as the following dialogue demonstrates:

Helper: Did you like staying at Donna's house?

Tom: (silence)

Helper: Did you like it there?

Tom: like Puff (rabbit)

Helper: Oh' (moves on to talk with another child as Tom turns away and obviously does not want to talk at the moment and answer the first question)

In conversation we expect our audiences to understand our intentions and respond appropriately. When they fail we are likely to feel they are hostile and uncooperative. Fulfilling expectations is important in establishing relations with others.

3. FACE: The need of individuals to be appreciated by their communicative partners. Moves in cooperative conversations are constructed to take account of the participants' need to preserve face. Politeness is an attempt to compensate for face threatening aspects of conversation moves. A continuation of the previous conversation illustrates this:

Anna: Tom's rude. He's not answering right.

Helper: Perhaps he doesn't feel like talking to day. When I'm busy I don't want to answer questions.

There is a dilemma here! The helper is intent on saving Tom's face but may be confusing Anna by condoning a flout of the rules of convention!

Nevertheless, these principles provide a framework for considering samples of conversation that take place in a variety of interactive environments for two of the children in the case studies. These contexts are now considered.

#### THE CONTEXT IN CHILD MANAGEMENT:

In this section teacher/therapist participation is described in the management of four children, with language learning problems, in two separate schools.

##### SCHOOL 1

Cases A & B received management based on an information processing plus interactive approach from a collaborative framework devised by myself and the teacher to consider all learning needs. The HAV was used as a guide to learning input and observation studies were completed of A & B in five different dialogue contexts, using the communication profile to ascertain performance. Thus, it was possible to find contexts that facilitated rather than inhibited learning.

This is known as INTERACTIVE management based on the principle of giving children facilitatory opportunities to learn and taking account of their

specific needs along with those of the class context. Management tries to make the system fit the client needs.

## SCHOOL 2

Cases C & D were given a selective intervention approach as the teacher wanted support work to operate on a withdrawal basis with the aim of improving levels of TALK, ie. patterns of sound and sentence structure. The Derbyshire Language Scheme(1980) was chosen. This was developed by Wendy Knowles(speech therapist) and Mark Maidislover(psychologist) for use in special school settings. The aim is to improve language skills of children whose linguistic development appears delayed. It sets out to teach a child to understand and use a range of different types of sentence, which become progressively longer and/or more complex as the child moves through the scheme. The child is taught aspects of grammar, such as the use of different verb forms, pronouns and some concepts (eg. big/little). The content and sequence of teaching is based on published studies of language development in normal children.

This is an INDIVIDUAL approach to learning based on the principle of diagnosis of deficits and targetting their removal. It is a method that concentrates on problems in the child and aims at helping the client to alleviate the difficulties and fit the system.

## THE SCHOOLS

The two schools in the study were both situated in villages on the outskirts of the same town, one to the east and the other to the west of it. Schools 1 & 2 had rolls of 75 and 79 pupils respectively. Each school

had three classes with full-time teachers including the Head who taught the top form with a 0.5 member of staff. There were additional visiting teachers for special needs and instrumental music. In addition the infant class had an assistant. School 1 employed a school leaver under the YTS scheme and school 2 had a retired teacher helping daily in the class. Both schools had similar facilities and were pleasant, friendly and relaxed environments.

#### ASSESSMENTS:

All children in the study were tested on the following:

1. The Ravens Progressive Matrices - to give an indication of general non-verbal ability.
2. The Utan scales - to assess levels of development in speaking, listening, reading & writing.
3. The Renfrew Action Picture Test - to ascertain informational and syntactic levels of language development.
4. The HAV inventory to profile information processing capacity.
5. The FACS - a phonological assessment of child speech.

Diagram 9.2 summarises the results for all four children and records assessments from the beginning to the end of the study over a twelve month period.



Haptic, Auditory, Visual Inventory																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																									
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TESTS: RAVENS PROGRESSIVE MATRICES, THE UTAH LANGUAGE SCALES, THE RENFREW ACTION PICTURE TEST, THE HAPTIC, AUDITORY AND VISUAL INVENTORY. (H.A.V.)

CODING: for the H.A.V. - R = Recognition; A = Association; Re = Retention; I = Integration.

School 1. Child Case Studies A and B

Child A.

A. was 5 years 6 months and the eldest of 4 children aged 4, 3 and 2 years. He lived on a Council Estate of 150 houses, in an isolated area  $3\frac{1}{2}$  miles from a large town. There was a high level of unemployment in the community and transport, to areas of work, difficult.

A's father was a painter and decorator who worked intermittently.

He was a charming Irish man, who was used to leaving the family unit if problems got difficult. At the end of my period of contact with A., the parents had divorced and the Mother had re-married.

A. was referred to the Child Development Centre because of failure to learn at school. He showed little interest in school activities and caused problems by regular wetting and soiling at home and school.

This resulted in tension with all those who were in daily contact with him. Children, at school, had started to reject A.

Mother managed her home and family well. The house was cared for, and the children always looked healthy and clean. There was good support from Grandmother and A's 2 maternal Aunts and an Uncle, living nearby.

### Child Development Centre Findings

Only Summary findings were available to me, regarding A. The Psychologist stated that A's mental ability was normal, but language skills were 2+ years below his chronological age. These observations were based on play sessions using the Piagetian Stages as a framework, rather than the results of formal tests. Tests of physical ability were normal and no difficulties were detected in either hearing or vision. The Doctor's investigations did not suggest any physical reasons for soiling and wetting. The only comment, on the Report, was that A. was small for his age, but healthy. All the adult family were, however, small in stature and below 5' 5" in height. Health Visitor Reports indicated that abilities of the three younger children were normal on developmental screening tests. There appeared to be no family history of language learning problem.

### Follow - Up

I was designated to support school and family with this child, and discuss strategies that might accelerate learning.

Speech Therapy Assessment findings at  $5\frac{1}{2}$  and  $6\frac{1}{2}$  years (after intervention) are shown in Diagram 7.3

Scores on the Utah Scales and the Renfrew Action Picture Test show a  $2\frac{1}{2}$  year lag in language skills although the Ravens Progressive Matrices indicated average thinking ability on non-verbal tasks. Findings, on the H.A.V. showed depression in all areas of information processing ability. A. demonstrated little enthusiasm or interest in people or things in formal settings.

## PRINCIPLES FOR LEARNING

UNDERSTAND HOW TO LEARN

MANAGE INFORMATION  
REFLECT ON WHAT IS KNOWN  
EXPRESS WHAT IS KNOWN  
RECORD INFORMATION

UNDERSTAND USES OF LANGUAGE

UNDERSTAND STRENGTHS & WEAKNESSES

UNDERSTAND HOW LESSONS, PROCEDURES  
MATERIALS RELATE TO LEARNING

### A FRAMEWORK FOR CONSIDERING LANGUAGE INTERVENTION

#### CONTEXT: class+teacher/therapist

##### TEACHER/THERAPIST AS LEARNER

- brings knowledge & beliefs to learning
- teaches in own learning style
- encourages learning to set plans
- organises class materials in specific ways
- expects standards of behaviour in class

##### TEACHER TALK

- decontextual: monologue: dominating; involves implicit demands; encourages different ways of participation; varies in complexity

##### TEACHER/PUPIL INTERACTIONS

- teacher/pupil knowledge, beliefs; talking/learning styles-match/mismatch

##### GROUP DYNAMICS

- arrangements in whole/small group/pairs
- demands working with similar/different ability

##### MATERIALS

###### READING way:-

- lack story organisation
- present complex form/ideas: (literal/figurative/inferential)
- encourage top down/bottom up strategies
- demand knowledge/experience/awareness

###### SUPPLEMENTARY (objects/pictures/diagrams) way:-

- present as concrete/abstract
- encourage different levels of inference
- demand vocabulary knowledge & familiarity

#### CHILD ABILITIES/NEEDS: cognitive, linguistic skills/awareness

##### COGNITIVE CHARACTERISTICS

- learning preferences (top down/bottom up)
- information processing strategies
- strengths in learning areas

##### COMMUNICATIVE COMPETENCIES

- make appropriate response to others
- express a range of intentions
- understand/use dialogue conventions
- demonstrate levels of sound/syntax ability
- show language awareness (speech analysis/synthesis)

##### ADULT INTERACTION

- adapt to teacher expectations
- use knowledge/experience to perform successfully

##### GROUP INTERACTION

- use turn taking/passing/grabbing devices in participation
- share own knowledge/experience

##### WORKING WITH MATERIALS

- realise the task purpose
- process access information
- cope with organised/disorganised materials
- select strategies based on own strengths/weaknesses

##### TASK COMPLETION

- demonstrate action plans
- predict consequences: make choices
- monitor/evaluate activities

SCHOOL 1: CHILD A

Both the teacher and myself agreed that A's overall learning needs should form the basic principles of management. Diagram 9.3a summarises these. This helped us to sketch out a framework that could relate the context to the learning needs. Diagram 9.3b tabulates this and clarifies four major issues in matching context and need:

Learning styles (teacher & learner)

Class discourse

Group dynamics

Class materials

LEARNING STYLES:

Child A preferred a "bottom up" learning style (see previous chapter for discussion on this). This was observed from watching him deal with puzzle and picture material. Since this matched my own preferred style there would appear no problems here, but the class teacher and helper were "top down" learners so this was taken into account when dealing specifically with direct teaching of A. Materials were selected that would assist him (e.g. puzzles were only chosen if the accompanying picture was available). This encouraged an holistic view of the task promoting top down processing.

DISCOURSE LEVELS:

Assessment results suggested that A would only operate at level 1 successfully so that the teachers and myself would only select "obliges" at this level if we required him to make responses in instructional discourse situations.



Mark and Tom showed systematic withdrawal strategies in certain communicative contexts and were labelled by others as uncooperative and emotionally disturbed. Such behaviour is not just an individual phenomena but extends into the social environment which may keep it from extinction after any initial cause has been removed. This issue is complex but although the case study does not do justice to it language problems are clarified as being both individual and socially interactive phenomena.

#### MATERIALS:

The class used the Crown readers which we felt were suitable for A as the stories were presented within a detailed picture context. One of the principles of these readers is the acquisition of linguistic structures so that the early texts do not contain complex language as do some reading schemes. A liked the cartoon type pictures and the stories were suitable for dramatising so extending their learning use.

With general material we tried to present objects/ pictures that were not too complex in ideas and did not demand a level of inference that he was not able to achieve. When going through the class resources it was surprising how much we needed to exclude. Even materials designed for children with learning needs are often unsuitable ( eg. picture sequences- difficult for those with bottom up learning styles).

GROUP DYNAMICS:

It was necessary to establish in what groups A functioned best so five different contexts were selected and transcripts taken from tape recordings for analysis. The contexts were as follows:

1. A plus teacher
2. A plus one other child of similar language facility
3. A plus teacher & another child of dissimilar facility
4. A and small group discussion
5. A and class discussion

INFORMATION PROCESSING STRATEGIES

As well as considering the context and learner needs it appeared necessary to focus on general information processing strategies to the child.

The priority problem, in School, was with processing and carrying out instructions. A. was a poor listener and attender to events, and this held up class routine. The H.A.V. results were a useful start to discussion and helped us to focus on the situation of our input to the child. Results, on Diagram B indicate poor auditory and visual retention, with scores of 1/12 and 2/12 items respectively. On haptic retention A. obtained a score of 3/12 items, so we tried the strategy of touching and feeling objects first before being asked to carry out instructions with them.

Here is an example:-

Instruction - Put the pencil on the table.

Strategy - A. was given the pencil to feel and then taken to put it on the table. This helped to remember the physical set of movements involved in the task. A. was then returned to the starting point and visual attention focussed on the pencil (object) and then the table (its intended location).

After the haptic and visual information had been absorbed the auditory instruction was given - Put the pencil on the table (eliminating clues, such as gesture) and just concentrating on getting A. to look at my face while talking.

Although this may seem laborious — once the pattern is established, it is surprisingly quick to execute. There was improvement to A's attention to adult request (a problem area because of poor memory).

Further discussion with the Teacher resulted in a LISTENING PROGRAMME, in order to strengthen this skill area. This was carried out on a withdrawal basis. Structured teaching for listening, was thought to be beneficial, because of the transitory nature of sound and the difficulty of giving it emphasis in the class context, where everything tends to be visually clued. Listening was also made a target area, in class. The Teacher and Youth Training Scheme Helper were encouraged to check that A. was looking at the face of the 'talker' before instruction was issued. Word sequences were to be kept short (no expanded sentences) and good pauses taken between ideas.

As a general policy, it was decided to give A. as much experience as possible in all four processes - recognition, association, retention and integration - on all 3 channels, with as little cross channel contamination as could be easily arranged. The Teacher was able to incorporate this strategy into the classroom routine.

The pattern of approach was sorted out weekly with the Teacher in the last 10 minutes of lunch break, before afternoon school.

I spent the first half of the session (15 minutes) in the Class, observing a variety of communicative contexts, and involving myself with the other children before withdrawing A. for a 20 minute session. Here the Listening Programme and talking activities, using books and games, were carried out. After each visit, I called on A's Mother, at home to discuss progress. Sometimes I took a game to be played. We discussed how the

strategy of listening and talking could be fitted into home living, but no formal work sessions were expected. The general advice was to encourage A. to look at the speaker before talking commenced and to expand, if possible, any comments he made & use contributory/maintenance moves. eg (C) Andy is gone Yes, Andy has gone to Aunt Jean's house to clean out the rabbit hutch. (C) we go tomorrow. (M) yes. Dad can take you in the van. We decided on a strategy of 'no comment' regarding wetting and soiling, and consistent praise for dry and clean periods.

After 12 months, A. was re-tested (Test 2 on Diagram 7.3).

The improvement in Test Results, school progress and wetting and soiling was marked. The Teacher felt he was functioning appropriately for his age level, <sup>joining in more conversations</sup> and the wetting and soiling had gradually diminished spontaneously without any modifying programme. Mother reported only a very occasional wet bed at home and no problems in the day time. A. appeared happier, in formal contexts, and communicating well with family and friends. He was put on Review. Six months later this improvement was being maintained, and he was a normal member of his class. A. was discharged, after 18 months as needing no further support help.

#### Child B.

B. was the second eldest child, in a family of 4, living on a remote Council Estate only a few doors away from the previous Case A. He was a boy of  $4\frac{1}{2}$  years, with an older brother of 6 years, who was at school, and 2 sisters aged 3 and  $1\frac{1}{2}$  years. Father was a semi-skilled building labourer, who worked in the nearest town, and when I saw B. was on extended sick leave, following an arm injury. I was asked to see B., by the Health Visitor, as developmental screening had shown language skills to be retarded. Results of Speech Therapy Assessments are shown in Diagram 8. These indicate a lag of  $1\frac{1}{2}+$  years on the Renfrew and Utah Tests and totals and sub-totals well below the Pilot Study norms of the H.A.V. Inventory.



## Intervention

B. was not yet at school, so I decided to visit him weekly, at home, for a session with him and his parents.

It was explained to the parents that language development depended on UNDERSTANDING words and having opportunity to USE them in a variety of ways - to get what you want, say what you feel, direct others, think and solve problems. UNDERSTANDING results from what you FEEL, HEAR, & SEE - linking up these experiences and putting WORDS to them. A Diagram (see Appendix) of how a child draws in information from outside, through touch/feeling, hearing and seeing, was presented. This information had to be recognised, linked to previous experience, and remembered, before being stamped with a word. This knowledge about words, and how they are arranged in sentences, is necessary before being able to use them for communication. A break, in the chain dealing with information from touch, hearing and seeing, could disturb understanding and talking. It was important, therefore, to look carefully at the chain and check for weak or missing links, have a chance to put sounds & words together correctly and use them in different speaking situations.

This was the context used for introducing the H.A.V. battery and results.

In B's home situation, one of the major handling problems was carrying out instructions. It was explained that there was, perhaps, too much information for B. to take in, at one time. Scores on the H.A.V. Inventory had shown limited visual and auditory memory (3/12, and 1/12). The haptic test for memory showed a 4/12 item score. The same strategy was adopted, therefore, as for Case A. - feeding in the information separately. The parents were encouraged to limit instructions to situations where B. could feel the objects involved and see where they were to be put, before the words were fed in to start the action. At this stage, attention was to be focussed on the speaker's face.

The strategy had immediate effect, so we set about giving experience in recognition, memory, association and integration, keeping low loading on pathways of information that were not at the time the focus of learning attention, & arranging opportunities for talk in pairs/small groups.

Loading was increased on other pathways when it was judged right to do so. After 6 months of weekly sessions at home, B. was seen in school, as he had just commenced the infant class there. He was in the same class as Case A. and it was possible to hold some of each session together (eg. the listening programme). Re-testing took place after 12 months, at  $5\frac{1}{2}$  years, and the results are shown in Diagram .

Performance, on this second testing, was age appropriate, and B. was put on a 6 month Review. As progress was still maintained, at this juncture, he was discharged as needing no further support.

## School 2. - Child Case Studies C and D

### Child C.

C. was the eldest of 4 boys. He was 5 years 4 months when first seen. His brothers were aged 4, 2 years and 9 months. C. lived on a Council Estate, in a small village  $2\frac{1}{2}$  miles from a large Midland town. Father was a semi-skilled worker, who had 2 jobs - one as a railway porter, and the other helping a friend with a scrap metal business. He was, therefore, not available to take an active role with child rearing. The home and family were well cared for, by Mother, who was usually tired and exhausted and did not have the energy to enjoy her children. She was, however, well supported by her Mother and a sister, who lived next door.

C. failed to make progress at school, in his first term, and because he proved difficult to manage (aggressive to others) in Class, was referred to the Child Development Centre, for advice.

### Child Development Team Findings

Only Summary findings were available to me. A Wechsler Intelligence Scale for Children showed an I.Q. of 83. No breakdown of results was available to me. Physical ability was adequate and no visual or hearing problems were detected, although C. was a mouth breather and had severe problems with catarrh. (He was never free from an infected running nose).

I took this up with the G.P. on two occasions, but he did not judge it a problem to merit E.N.T. investigation.

Follow - Up

C. was assigned to me, for follow - up work in school, as language was delayed. He had not been co-operative with the Speech Therapist, at the Child Development Centre, so only subjective comments, regarding this area were available from the Case Conference Results.

Diagram 1 details my own Speech Therapy Assessment findings, completed after the Team investigations. Utah and Renfrew Scores indicated a language level below 3 years, at a chronological age of 5 years 4 months. Scores on the H.A.V. Inventory, in all areas, were well below the Pilot Norms for his age group.

The findings were discussed with C's Teacher. She was anxious for me to expand his limited range of speech and language. As she was unfamiliar with developmental language stages, it was suggested that the Derbyshire Language Scheme was used to give guidance and support when I was not in school, as well as acting as a reference for teaching ideas.

C. reached Level 6 on the Rapid Screening Test, which the Teacher observed me give to him. Activities were sorted out, at this level, beginning with past tense verb forms. I provided picture material, and at the Teacher's request, did some work on sound discrimination and sound symbol links.

Much of C's speech was open syllable and final sounds were often omitted although he was able to imitate from an adult model, without difficulty.

The Teacher was clear and precise about my support role. She wanted me to deal with C's speech while she took charge of number and reading.

Sessions were separate components on the time table. Although I discussed each session spent with C., and left work to be carried out with the voluntary assistant (a retired teacher), I did not feel there was understanding of the underlying functions, which tied learning of language with general learning activities at school.

The Teacher was glad to have someone to remove C. from the Class for an hour each week. She was uneasy when I was in the Class and did not welcome my interest in classroom activities, as a whole, and I, therefore, gained only scant impression of other children in the group, and the group dynamics involving C & his responses in a variety of communicative situations. I found C. willing to co-operate in one to one situations, but it was always difficult to sustain attention. Pictures and games were used to build sentence structures. Sounds were worked on, from front (eg. p) to back (eg. g) basis and established in final, initial and medial positions. Much of C's work in Class (with voluntary helper) consisted of reading through the Ladybird Series to 2b, which <sup>was</sup> achieved in an over learning method.

I visited Mother, at home, weekly after each session, to tell her what we had done. No attempt was made to do formal work at home, but I did take games to play and asked Mother to encourage C. to look at her face before she spoke to him, and expand sentences when it was practical to do so.

C. was re-tested, after 12 months, at  $6\frac{1}{2}$  years. The results are shown in Diagram B.

The Utah Scales showed an improvement of 1 year 4 months, scoring at a 4.1 year level, at 6.4 years. The Renfrew Test showed a 9 months improvement, scoring at a 3.6 year level. Scores had doubled on the H.A.V. visual and haptic tests, and improved by 6 times (3 to 18) on the auditory assessment. These were still well below the Pilot norms for age.

At this time, I was asked to stop sessional work in School and re-programme this in the Clinic at the nearest town, because of changes in service policy rationalising treatment in central Health Service Centres. Mother was unable to bring C. to the Clinic because of the transport problems this caused. The bus service meant that she would have been involved in a day's absence from home, for one half-hour Speech Therapy Session. No further support help was, therefore, possible for this boy.

Six months later, the Educational Psychologist wrote to say that C. was to be transferred to a School for children with moderate learning difficulties, as progress was slipping back and the problems were not manageable in the present context.

C. was showing signs of disturbance, and masturbating frequently in the classroom and playground.

I was unable to see C. again, as I left the Speech Therapy Service, at this time.

#### Case D.

D. was the brother of C. above and second in a family of 4 boys. He was 4 years 3 months when referred by the School Medical Officer for Assessment. He had been tried in the Village Play Group, for 2 sessions weekly, but was unable to cope socially in a large hall, with 30+ children. He became difficult to manage and used to hurl the play equipment and pinch children and adults if he was so inclined.

Family details are, of course, the same as for his brother C.

#### Follow - Up

Testing on the Utah Scales revealed language at a 2year level and below the 3 year level on the Renfrew Test. ( norms are not available below this age level) Scores on the H.A.V. Inventory indicated levels well below the Pilot norms. The data, for all tests, is available on Diagram E. Since I was following a programme of language development, based on the Derbyshire Language Scheme, with the elder brother, C., I started on the same programme with D., beginning at Level 5 activities with the understanding and use of the negative. This level was established after use of the Rapid Screening Test.

I saw D., at home, although this was difficult because of the family distractions. There were two small boys at home, as well as D.

When D. started the local Village School, at 5 years old, he was in the same class as his older brother and came for a short period of individual help, before a joint session with C. This was based on the Derbyshire



activities. The joint session consisted of sound training work and some attention to basic concepts. (see list in the Appendix)

Work was left, and explained to the teacher, each week. A follow up session then took place with Mother to discuss progress. She was encouraged to cue D. in, by looking before speaking or giving instructions, as well as expanding any incomplete phrases.

eg. Look, (A)manda. (Mother) - Yes, Amanda is pushing her doll's pram down the path.

Picture matching games, sound lotto etc. were left at home for family play. Sessions, at home, were stopped at the same time as Case C., because of rationalisation of Speech Therapy Services.

D. was tested again, 12 months later, at 5 years 3 months. Although scores on the Utah and Renfrew Tests had doubled, he was functioning only at a 3 year level, well below his chronological age.

Scores on the H.A.V. Inventory show the same pattern but still remain well below the Pilot norms for D's age. These are available, in detail, in Diagram B.

Just before I left the Speech Therapy Service, six months later, I heard from the School Psychologist that D. was being considered for the same school, for moderate learning problems, as his elder brother. He was unable to fit socially into his Class group and was aggressive and naughty. Progress with school work was regarded as unsatisfactory in comparison to his peers.

### Discussion

These four children were seen for Assessment and subsequently given weekly support, in school and home settings. Although not set up with the intention of being 2 pairs (A/C, and B/D), circumstances made comparisons possible.

1. The pairs were of similar age. A(5.6yr.)/C(5.4yr.), B(4.5yr.)/D(4.3yr.)
2. Socio-economic background was alike. The Fathers were semi-skilled workers, and Mothers were both housewives, living on Council housing estates out of Town.

The Derbyshire Scheme is an example of the sort of patterned intervention widely practised by the Therapeutic professions. It is dependent on scientific skills of analysis and definition of the problem, carefully selected targets and a developmental progression to a goal.

Such an approach has less following in the teaching profession. Teachers see themselves as 'artists' and less as 'scientists'. They base their work on classroom interaction between themselves and the group and put emphasis on the giving and receiving of information in order to facilitate learning in a variety of contexts.

The H.A.V. model is thus one teachers are likely to identify with as responding to the needs of teacher and pupil in a Class context. Since it does not focuss on the highly specialised areas in language, such as phonological and linguistic analyses, there are likely to be less barriers between teacher and therapist and the link between spoken, and written language skills more easily appreciated in this Assessment format.

This is felt to be a positive situation as Teachers often baulk at Speech Therapy Assessments and do not readily see the connection between them and skills they concentrate on in teaching reading and writing.

The Teacher, in the School where A and B attended, found the H.A.V. separate channel approach easy to grasp. She admitted that these areas were ones she took for granted and hitherto had not realised the importance of breaking down stimuli input in ways that would not overload a child considering the context of conversation. The comment was made: 'I know one has to simplify things but had not previously thought how, in practice, this could be achieved'.

Working together had tremendous spin-offs. I gained knowledge of the group and the standard of their work, in comparison with A and B. My specialised approaches towards teaching skills of attention, memory, and perception were adopted by the Teacher, and we both felt that because we clearly understood the framework and what we were aiming for, we had confidence that the strategy would work and the children

make progress. There was never any question, in our minds, that the 2 children would not be able to learn. We worked out what they needed to achieve and how we could arrange a context to suit them, and assumed that it would work.

In Case C and D the Teacher saw me as the 'Speech Expert' and expected me to be responsible for teaching this area, while she dealt with reading and writing. Thus separatist strategies evolved. I was not working WITH the Teacher but ALONGSIDE, and as I was not absorbing myself in classroom activities, I only had a hazy idea of what children C and D were required to do in their everyday school context. My lesson plans were more abstract based on what I felt they should know rather than on what they needed to know in Class. I was unhappy about this working style, but as a visitor to School, I feel unable to impose my own style on others unless they can accept it.

Although I had no difficulties gaining the confidence of children Cand D, my feeling was that sessions were of limited value. The Teacher wanted these 2 boys to fit her routines in Class rather than adapt them to suit their needs. They were expected to cope with what the others, in the group, did in a formal class routine. Clearly this was a problem as they did not have the skills to succeed at this level. Across the curriculum collaboration, common goals, philosophies, and methodologies have to be applied, in a consistent way, for any positive result. It remains a professional dilemma to tease out the variables that contribute to success.

In School 1 whwere A and B were placed, the Teacher clearly had flexible attitudes that did not confine me to select 1 or 2 aspects of language for teaching. She grasped the concept of WORKING WITH another professional which meant dispensing with notions of role and taking a common sense view of what the particular children needed. There was an 'across the curriculum' approach. The strategies we discussed were consistently

used in all situations. Many of my specialised games and teaching materials were purchased as back up material for all the children in the Class to use.

In School 2 where C and D attended, the Teacher viewed us as having separate and different responsibilities. There was little evidence of my work being carried across school life. I never felt the Teacher saw it as necessary to understand what I did. I was the Expert, so it was my job to teach children to speak and not hers.

Clearly, attitudes of professionals towards each other, a consistent across the curriculum approach, and shared responsibility are important for success, but these may be merely by-products of a positive attitude to the child and a will to adapt to individual needs.

If a Teacher does not see a child as fitting her view of what he should be and wishes to remove him from the class, whatever visiting professionals try to achieve in the way of improved levels may be viewed with displeasure. If a Teacher 'rejects' a child how does this affect the social dynamics of the Class and the child's status in the peer group ?

Even if much more detailed data was available and the Teacher in Class (School 2) was more co-operative we still do not know whether there would have been a difference in progress.

Thus, evaluating Assessment and Remediation procedures is fraught with problems. There are so many variables involved, and it is impossible to separate them entirely or speculate on how they interact for success or failure.

Of prime importance, however, must be a POSITIVE ATTITUDE, bringing with it CONFIDENCE, COOPERATION, and an across the CURRICULUM approach based on COMMON goals. The method adopted may be of secondary importance, but could be important in gaining interprofessional understanding and seeking a common starting point and goal.

Case Studies do not assess this situation adequately as there are too many

variables to control. As a long experienced professional, I have seen others having great success with methods that I would not be confident about. The personal attitudes of professionals, parents and clients have, therefore, to be considered as of primary importance in success. My personal attitude, therefore, may have been of considerable influence here. In the first 2 cases, the Teacher was very pleased to accept the <sup>as a basis for interactive management</sup> H.A.V. approach, It was a scheme I, personally, felt happy with and I assume I put forward a confident front to those with whom I was working. In the second 2 cases, I was working with the Derbyshire Scheme, which I have frequently used in practice as a selective approach to aspects of language. The Teacher, in this School, did not see me working with the whole child so the approach suited her concept of my 'Expert Role'. Although this is only speculation, she may have felt that C and D were not ever going to fit her particular Class routines and, therefore, she was not seeking for improvement but removal. Both these children had shown behaviour problems. At 5 years old they had exhibited thinking ability within the average range, albeit language showed considerable retardation. Very soon, however, they found themselves on the road to a school for children with moderate learning difficulties away from their home peer group and out of mainstream influence.



## SUMMARY

Two child case study pairs are documented each using a different management - individual vs interactive approaches. The children involved with interactive procedures made satisfactory progress and at the end of the study needed no further support. The two boys undergoing an individual method failed to maintain progress and were eventually sent to a special school placement. The intervention style may not have been as important as the teacher attitude. It is possible that school 2 did not want the boys in class if they could not fit the system and so was seeking their removal. The difference in teacher philosophy is a crucial variable that this study could not measure satisfactorily.

It remains logistically impossible to achieve good matched studies of children with language disorder. Their personalities, backgrounds, learning contexts and problems are difficult to quantify and measure accurately. The only possibility is a single study approach selecting different components for contrasting management methods. The integrated information processing and contextual approach does not lend itself to this mode. In spite of all the difficulties, the intervention used with A & B has been successfully replicated in other studies (Trent Medical Research Council studies, Sage, 1986) and is viewed as a practice that should be encouraged. Thus, the context approach to management is advocated.

It is, however, dependent on therapists and teachers having a common view of learning problems and both able to analyse classroom practice and understand curriculum needs. We may be some way off this situation in the real world. Recent research by Viney & Swinson (1990 in press) documents teachers' understanding of communication problems. Studies established their lack of knowledge regarding the needs of children with language difficulties and a view of speech therapists as only experts in phonology with little working knowledge or particular interest in school language. The research clearly demonstrates that teachers do not make the connexion

between a language and a learning problem. To achieve teacher-therapist relationships in normal practice will require radical changes to professional training and a move from the medical to educational model in speech therapy practice so common approaches are possible.

The present study demonstrates the effectiveness of a joint professional method and the algorithm in Diagram 9.4 summaries how information processing approaches can mesh with contextual language needs. Correct input, compatible learning styles and collaborative relationships produced satisfactory learning results for cases A and B. Attention to the real needs of children; creating opportunities to use language by removing constraints (eg: over controlling situations) and fostering participant relationships demands a wide appraisal of the issues involving child, family and school. Such management is dynamic and responsive but because there are no standard textbook programmes or established norms it is only possible to qualitatively assess results. However, standard testing did indicate marked improvements in language content and form although no specific targets were chosen for intervention. By increasing language use it appeared that form and content were naturally facilitated.

Cases C and D received a targetted approach concentrating on teaching language structures. Formal measurement had ascertained deficits in sounds and syntax which were tackled in a specific language programme which was additional to the general school curriculum. Repeat testing monitored improvements which were not sustained when extra support stopped.

The general conclusion is that if we want to improve language for learning we need to develop the interactive method allowing the child control of

learning and opportunities to talk and practice the narrative skills that will take oracy through to literacy. In so doing we give children the chance to develop language content and form with the minimum of support. The child learns only what he needs to and this economy is the core of active education and effective communicating.

## CHAPTER 10: ——— CONCLUSIONS

### INTRODUCTION:

The chapter considers implications of this research for children with language difficulty. Studies were initiated because of a need to understand clearly why this group failed to make academic progress. Early consultation revealed three key issues:

1. The nature of language difficulty- (delay/difference debate).
2. The attitude differences of home/school/society affecting interaction- (cultural conflict debate).
3. The communication styles of oracy and literacy and their implications for the instructional situation- (individual/interaction/integration debate).

These matters provide the focus for studies aiming at a broad view of language difficulty. This section will consider how the research has contributed to knowledge in this area. The results are discussed as a basis for suggesting further action.

### PRELIMINARY STUDIES

Initial investigations centred on consultation between participants in the learning process (children/parents/teachers/therapists etc.) in order to establish a base line for action. Since individual clinical approaches to assessment and management had not elicited useful information for planning instruction, a pilot group was observed in school contexts and a communicative profile devised to record examples of language in use. Quantitative measures of

performance were made to compare LD and N populations. Data in chapter 2 showed how LD children were dominated in conversations so lacking opportunities to develop language for learning and socialising. Examination of intervention demonstrated individual approaches directed at remedying deficits in linguistic behaviour. Parents and teachers were generally unaware and uninvolved with management decisions of therapists and there were often conflicting attitudes towards solving problems. The case study at the end of chapter 2 illustrates this showing the complex nature of child and family problems and the many issues that have to be considered in trying to find satisfactory solutions. Although the communication profile can be considered a crude and simplistic instrument, as it does not monitor paralinguistic features, levels of intention or range of function, it appears effective in highlighting the interactional situation and suggests LD children are controlled by their conversation partners who adopt a didactic stance towards them. The profile is now used by speech therapy students on one training course and 26 recently completed records confirm the passive role of LD children in clinical dialogues with others. Clinicians asked numerous questions (frequently of the closed variety) and did not offer contributory and maintenance moves that facilitate child responses. There was unawareness of this inhibitory behaviour. Therefore, language difficulty distorts the social environment which in turn does not provide it with normal opportunities to develop. The questions that arise from this are:

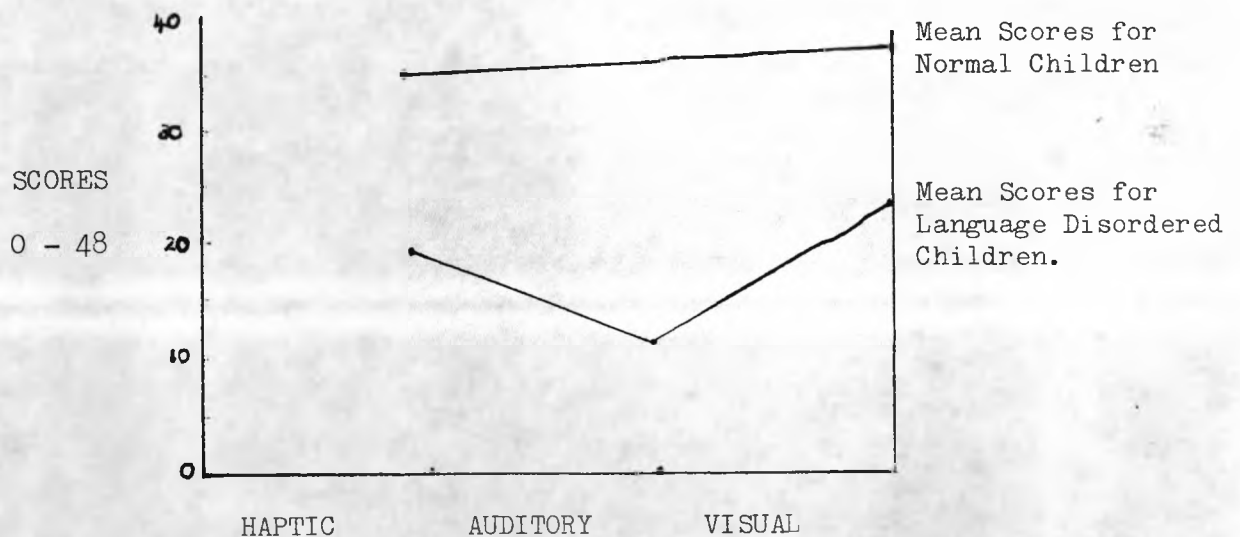
1. Do processing differences exist that prevent normal exchanges?
2. Do problems alter over time?
3. How do participant attitudes affect the development of normal patterns of communication?
4. Are communication differences in social exchanges due to lack of skill or lack of opportunity?



ISSUE 1: THE NATURE OF LANGUAGE DISORDER - THE DELAY/DIFFERENCE DEBATE: STUDIES  
OF LANGUAGE DISORDERED (LD) & NORMAL (N) CHILDREN

Review of the delay/difference literature in chapter 3 suggests variations in cognitive performance between retarded and normal populations. Therefore, a system was devised to look at information processing capacities of forty LD and forty N children (chapter 4/5). A "modal" model was used which attempted to separate haptic, auditory and visual input. The graph below (diagram 10.1) summarises the significant differences in haptic, auditory and visual processing between LD and N groups. Although auditory processing showed most contrast this may have been because of its transient nature and heavy demand on short term memory.

Figure 10.1 Comparisons of Mean Scores for Normals and Language Disordered Children on H.A.V. Totals.



As well as performing less well, the LD groups were slower completing tasks (mean-70 minutes) compared with N children (mean-53 minutes). Attention was less sustained for LD children. They scored an average stage 4 with fluctuating performance whereas Ns mean was stage 6 with stable achievements (Reynell,1977).

#### PROBLEMS ENCOUNTERED BY THE LD GROUPS

LD problems can be summarised under the headings: critical features, relationships and patterns.

#### CRITICAL FEATURES:

The LD groups showed less success in haptic, auditory and visual matching tasks. Evidence suggests that inferior coding strategies were in operation. For example, persisting problems with visual orientation and mirror matching were apparent indicating lack of or slow development of relative and spatial coding procedures (Bryant,1974). In haptic tasks the LDs demonstrated immature investigative strategies of tongue and hands. Auditory tasks showed poor integration of hearing, listening and attention. There were problems coding rhythm and the time pulse of speech sequences. Questions were often reproduced as statements and unstressed syllables omitted in word repetition tasks, although LDs demonstrated articulatory ability to reproduce such sound sequences.

#### RELATIONSHIPS:

The LD groups showed strong evidence of inability to link information presented-

seen in visual ordering, sorting, and complex picture tasks; auditory sentence repetition and story retelling, and in haptic exercises involving folding paper into an envelope. In sentence repetition, LDs often just repeated the last two words of a sentence, thus displaying a non/shallow processing strategy denoting incapacity to relate physical, structural language and semantic characteristics. In contrast, the Ns were able to extract meaning even when the length of sequence was too long for their memory processing abilities.

#### PATTERNS:

An aptitude to perceive initial early elements of an arrangement, whether haptic, auditory or visual, is essential to the anticipation of other elements and the hierarchical structure of a task. Without this pattern prediction ability, an element by element strategy has to be employed which restricts retracking and prediction and impedes flexible thinking and linking. The LD children displayed a string of beads (element by element) strategy whereas Ns adopted a hierarchical mode, with several sub-routines, enabling quicker identification of the central concept of a task and a faster route to access meaning. For example, N subjects demonstrated economic scanning, chunking and rehearsal strategies when dealing with visual memory tasks in contrast to LD children who showed no mapping of sight to sound to help retention.

Therefore, the LD groups had less appreciation of the overall context (top down strategies) and showed difficulties in dealing with more than one perceptual skill. Even in the simple auditory matching task a child has to be able to discriminate, sound, retain and sequence the stimuli in order to make a correct response. The LDs showed problems in integrating these perceptual and cognitive components. This overall depressed performance indicates that it is unlikely

that one single deficit could account for the many aspects of the learning problem. In the present state of medical knowledge we cannot assume with confidence any specific central nervous system lesion. We need many studies of developmental patterns of children, with initial language difficulty, to decide whether there is lesion, delay in maturation of relevant neurological systems, mismanagement of the teaching/learning situation or perhaps a combination of these possibilities.

In summarising the evidence, we find that the LD groups were able to plan, check, test and evaluate their task strategies in a manner similar to N children but that cognitive differences existed in attention, perception, memory and organisation. This means they do not develop the sub-routines to cope successfully in complex tasks (eg: remembering information beyond short term capacity).

The study begs the question: Is "language disorder" an appropriate label for children, who display problems in visual and haptic as well as auditory cognitive processing? Such a diagnosis puts the child under an instruction regime that has linguistic bias. Does cross modal development depend on language as a connecting link between entries? This has been suggested, at various times, by Ettlinger (1967), O'Connor & Hermelin (1963) and Blank & Bridger (1964), Gopnik (1987). Bryant (1974) feels that the language hypothesis about cross modal organisation is not tenable, on the basis of work with chimpanzees and orang-utans, which shows that cross-channel links are possible without the help of language. However, such comparisons may not prove useful as it is possible that in human species, where spoken language is the vehicle for learning, cross modal links are dependent on it. The visual retention tests of this study suggest this. Obviously we need more knowledge about intra-modal and cross-modal development. At this point it

seems pertinent to summarise evidence of other researchers as a basis for considering LD children.

#### SUMMARY OF EVIDENCE REGARDING LANGUAGE DISORDER

Chapter 3 reviews evidence with regard to human information processing. Many researchers put down LD problems to fundamental peculiarities of attention. This study confirms marked differences between LD and N groups in their levels of concentration. Mark and Hardy (1959), in studies of primary age children, describe these as disturbances in the orienting reflex (OR) interfering with the establishment of meaning. The built in startle and orienting reflexes are normal and are strengthened in the role of attention centering mechanism for new stimuli in other sense modalities. As the LD child reacts to alternative channel input the functional significance of the attention centering mechanism is reduced and reinforcement is less frequent. Simultaneously, the child continues to be provided with stimulation through a malfunctioning auditory system to which he cannot associate and so remains meaningless and uninforced. This makes for disorganised learning processes and a general inhibitory effect.

During the course of this research an orthoptist used the visual subtests as an early screening device for reading difficulty. She explained how the LDs poor attention for sound stimuli affected the development of eye movements. Children are alerted to fixate on objects by noise (eg. dog barking). Gaze patterns are stimulated and reinforced by sound. Her view was that the poor eye movements of LD subjects (shown in handling visual input) were the direct consequence of a malfunctioning auditory system.

Therefore, this theory of inhibitory effect/defect directs attention to processes rather than symptoms. It may be likely that inhibitory modes,



involving the central auditory system, are detectable in other sense modalities. Coltheart et al(1987) suggest that general functional properties of the central nervous systems may be altered and critical to the key auditory systems which are involved in rapid rate processing. The practical consequence of viewing OR disturbances as inhibitory rather than subtractive loss is that early detection may prevent deterioration of sound awareness by educative techniques, such as the "Listening Programme", which formed part of the management discussed in the case study A/B in chapter 9.

In this context, the studies of Walter(1973) were reviewed(chapter5) concluding that the "set to attend" is not present in children below three years(ie: before the age of integrated levels of attention. Raynell,1977). This is based on the fact that the contingent negative variation (CNV) is absent from EEGs before this age and from brain patterns of many children with LD. Edwards(1973) states that this "set to attend"(expectancy response) can develop by differentiating the modality and the rate and order of stimuli applied.

These ideas integrate with the present HAV model and the emphasis on the development of processes rather than on prescriptive action alone. Berry's work(1972 onwards) is important here, as it concerns itself with the underpinning of language in order to develop attention for speech. This corresponds to Lenneberg's(1967) basic time pulse. Children need to learn rhythmic activity involving the whole body in order to catch on to the pattern and develop concentration and attention. Berry describes "all co-eval movement patterns as being an integral part of the total communication situations from which speech patterns can not be subtracted"(1980). However, these are often disturbed. If you consider the LD groups which I currently teach one can observe that general motor skills such as hopping, kicking, catching and throwing a ball

and imitations of actions in simple songs are as delayed as verbal communication. Elements of activities have to be differentiated and brought to consciousness in teaching. For example, in ball catching it is necessary to high-light object memory (eg: passing round a ball in a ring and then pretending to do so with the ball removed) in order to focus on hand posture and space relations. All elements of the task of catching need practice and reinforcement in this way. Similarly with speech - differences in pitch, stress and time must be introduced and contrasted in order to raise awareness and understanding as the "Listening Programme"(chapter 9) demonstrates. Thus, there are enormous implications for teaching/therapy and curriculum planning.

The suggestion of this evidence, and perhaps that of our research study, is a possible lag or underdevelopment involving all relevant neurological systems when you compare LD with N children. However, Orton(1937), Hecaen & Sauget(1971), Suetsugu(1979) and Ball and Nuttall(1980) suggest differences in brain pathology. Much attention has been given to explaining this phenomema. Orton(1937) postulates a lack of clear cut dominance as do Hecaen & Sauget(1971), Benson & Zaidel(1985) and many others over the past decades. Dennis & Whitaker(1976), Satz et al(1985) report different configurations of language skills developing in the two hemispheres, with the left concerned with conceptual and semantic features and the right concerned with organisational, analytic, syntactic and hierarchical aspects. Thus, a large network is involved and complex structures need to be integrated. This suggests that intervention must consider the development of all systems. The purpose of this study is to devise a framework for this and the next section summarises its utility and suggests points for management.

#### THE UTILITY OF THE HAV BATTERY

Other than the oral stereognostic tasks (which involved irritating cleansing procedures for objects between subjects) the assessment battery was easily administered and enjoyable to children. The format provided a structured opportunity to monitor a wide range of information processing abilities. The tasks proved within the experience of children and relevant to educational targets. For example, the complex picture and picture strips (visual section) allowed observation of top down and bottom up processing styles, levels of inference and retention of detail which teachers view as vital knowledge in deciding the right learning materials to employ. The movement patterns (haptic section) suggested writing activities based on movement sequences. Similarly, the sentence repetition and story retelling tasks drew teachers' attention to the problems of LD children taking in instructional language.

Hamilton-Fairley's (1989) research is of interest here. Studies showed that children with IQs of 128 needed information repeated 28 times (IQ-118/35 times: IQ-98/38 times) before content was absorbed! Teachers were able to sit in on HAV assessments, additional to the research study sessions, and all expressed surprise at the processing difficulties of LD children. Classroom practice had not allowed them to be aware of these input problems and, therefore, they were not considered in teaching.

Teachers felt that the assessment gave them information that they needed to know when planning the instructional context for LD children. They stated that the format was more useful for language for learning than traditional speech therapy tests. Therefore, the HAV provided a framework that enabled teachers and therapists to adopt a common concern and plan together for learning goals. Furthermore, the assessment has proved a useful preventive screening device. In a study described by Sage (1986) an orthoptist used the visual subtests to identify children with possible reading difficulties so alerting others to

provide the right support.

The new national curriculum emphasises listening, talking, reading and writing as being of equal importance in education. The HAV attempts to make an audit of avenues of learning and consider spoken and written language as a continuing linked process. Knowing the status of individual components helps in deciding right input levels. For example, if haptic processing is easier for a child, allow this input before drawing attention to shape(visual) and word(auditory) information. Chapter 9 explains this technique in detail for case A. Separating out processes is artificial as normal tasks integrate information across modality(although discussion of management[pg.9] suggests the utility of this).However, the statistical data(chapter 5) confirms that it is possible to isolate components in this way, by putting other features in low loading, so providing critical knowledge for management. Therefore, the assessment is viewed as a possible device to monitor modality input levels to LD children and decide suitable learning strategies. It was not the intention to provide an assessment of cross channel functioning as it was felt this was best considered in normal activities where it naturally occurs.

The study establishes the lack of prominence that receptive processes receive in management and important issues emerge.

#### 1. Intervention Principles.

Our thinking about language management is reflected in intervention principles. These have adopted developmental strategies directed at improving mainly linguistic forms of sound and syntax. The present research study suggests four interacting axioms: i) active learning ii) awareness of strengths and weaknesses across learning domains iii) oracy to literacy transitions iv) relevance of instructional content and context.

There has to be a more economic approach targetted at the child's context demands. This should combine cognitive and communication instruction. The input modalities must be considered first and then output monitored in situations of normal use. Language intervention needs to become simpler- collapsing the categories we assess and teach. Traditional models have encouraged the splintering of skills resulting in professionals neglecting the critical factors of learning development. All models of language are abstract and incomplete descriptions of complex behaviours. Failure is not within these but with specialists who interpret them literally.

## 2) Resource Content.

Most resources do not take into account the information processing difficulties of children. Visual material often fails to provide bold outlines making critical features difficult to extract (eg: Edinburgh Articulation Test/Photographic Aids). Stories may not provide the structure and content needed for successful processing of meaning (setting, initiating event, internal response, attempt, consequence and reaction). Without plot structure and text cohesion comprehension is difficult. Teachers and therapists rely heavily on commercial materials but must be aware of their problems. Specialists with knowledge in these matters should have access to educational publishers. For example, orthoptists have enormous expertise with visual presentation but they are a Health Service profession with no contact with education or schools. I approached a very senior orthoptist who commented: " We have no professional official links with educationalists. I feel strongly that we should work in hospital environments for availability of equipment and access to the eye-team". Although convenient, this does not allow the sharing of skills to those who need them for teaching children. Similarly speech therapists lack opportunities to



work with teachers and develop awareness of strategies that help rather than inhibit child talk. Progress will only occur in child management if we commit ourselves to resolving these matters.

## ISSUE 2: PARTICIPANT ATTITUDE DIFFERENCES-THE CULTURAL CONFLICT DEBATE

Preliminary consultations with parents, teachers, therapists and others confirmed the existence of many different attitudes existing in society relating to the management of learning problems. Hegarty and Pocklington (1981) document these in a review of integrated provision. In attempting to provide successful guidance it is essential that conflicting ideas can be resolved. The case study (chapter 2) describes the emergence of these view differences in a longitudinal study of a child and demonstrates their destructive effect on progress.

Therefore, it is important to seek documentary evidence of these attitudes and consider their implications. Since the medical ethics committee felt it was inappropriate to investigate professional impressions of parents or attitudes towards each other I was only able to construct a study on the parental view of experts. However, this was enough to establish the polarised thinking of participants and understand the reasons for their perspectives. The parents were against many of the practices and procedures of specialists demonstrating the lack of communication and cooperation existing between them. Much of this was rooted in traditional conceptions of each others role. The professional was trained to be a specialist and expected to be able to administer expertise placing the consumer in a passive, less powerful accepting position. Modern views foster notions of a more equal responsibility and highlight the changes necessary to achieve this involving active parent participation and professional

consultation and negotiation(Warnock Report,1978). This marks a shift from expert to consumer models of practice. However, can this be a practical reality? A study of collaborative parent and professional practice in an opportunity group(chapter 7) demonstrates a developmental structure that can achieve success for clients. The results of this enterprise were compared to traditional management(periodic clinic sessions) and although patterns of improvement were similar the rate of gain was much greater in the consumer model of practice. The impossibility of matching important variables in comparison studies remains problematic but qualitative observations suggest that collaborative models, if successfully applied, do increase motivational levels of participants by providing rewards of gratification and success. Awareness of stages in the cooperative process is a vital element in establishing social cohesiveness and strength. By showing participants the importance of features (eg: confirmation and support) it was possible to deal with discordant and disruptive elements (eg: outside criticism of experts diluting expertise by involving parents).

Although this was a small study(25 parents) and it is dangerous to generalise results, other research confirms the issues that this project clarified(Stewart,1989). These are that parents want information, wish to be actively involved in management and need support in carrying out decisions. In establishing such goals the relationships between participants is vital. This can be a time consuming element and demand a far wider range of professional resources than the expert model. Such a partnership is a contractual arrangement with each participant having expectations of the other. These must be reasonable and made explicit in honest exchanges between persons.

The attitude survey highlights the rather brittle relationship that exists between parents and professionals and raises many issues that have to be

considered if change is sought.

### 1. Service Management.

However skilled the individual expert their help will be limited and even destructive unless they coordinate their activities with others. Recent reports have emphasised the need for team approaches (Court, 1976; Warnock, 1978; Simon, 1981; Fish, 1985). Interdisciplinary styles imply specialists working closely together. Attributes such as respect, effective communication, and ability to share knowledge are essential. However, pilot schemes combining elements of training for therapists and teachers demonstrate a need to develop consultation skills in shared practice arrangements (eg: therapists working with teachers in class) and this involves time, energy and much commitment (Sage, 1989). An equality of status has to be attained so that hierarchical working styles have to be abandoned. Although there may be acknowledgement of these ideas their practice involves the resolution of personal and professional issues. For example, if rotating chairpersons were adopted to coordinate working groups how many doctors could contemplate a nursery nurse or teacher having a controlling influence? The training of therapists has a very individual approach that makes it difficult to consider interactive methods.

### 2. Professional Support

Parents want support and professionals also need it. Experts generally have heavy workloads and are consequently vulnerable to stress. In a consumer model with more open scrutiny of their practices extra pressure is put on them. Specialists must have the support and understanding of their own departments

and working colleagues. A social network and counselling structure is essential if experts are to deliver balanced judgements and retain sanity in the harassing world! Such support should not be left to chance. Professionals must be aware of a structure set up to maintain them and know how to use it effectively.

### 3. The Family Focus.

Many services remain child focused, but the case study (chapter 2) clearly showed that child problems become family ones with complex issues involved in their solution. This raises the question of policy decisions as education and health services are not psychologically or socially targetted so that academic achievements and physical care are the main priorities. This has national implications with regard to professional training and resource provision in order to achieve family orientation. Professionally it entails breaking down barriers and sharing skills and knowledge. However, our specialist bodies are strong empires and there is emotional investment in keeping skills within expert domains. There has been a move in all professions towards graduate status and greater academic attainments. This brings dilemmas, because higher learning achievements can create distance between clients and colleagues and reinforce expert notions. Mastering deeper theoretical concepts may be at the expense of professional self development and practical skill. There can be more emphasis on "know-that" than "know-how" in professional training.

### 4. The Role of Voluntary Organisations.

Studies in the opportunity group demonstrate the flexibility of a voluntary service. This was set up by Mencap but given that such an organisation has been in existence for a long time its relationship with the statutory services is far from clear. Although some professionals work closely with such bodies others

seem to ignore them and even feel threatened by them. For example, at the opportunity group criticisms from outside experts regarding giving parents false hopes was not substantiated by fact. Chapter 7 records a profile of greater improvement when compared with periodic intervention. This may have been defensive reaction but if official services are able to accept the potential and expertise of voluntary ones in a complementary spirit this would be in line with notions of partnership and ease burdens of responsibility. A structure for working together has to be negotiated and maintained in an atmosphere of trust, respect and support.

#### 5. Information Resources

No perfect system will ever be devised to remedy all problems. There is a constant demand to explore new ideas. A major need for all participants is access to up-to-date and accurate information. Books, pamphlets, data bases, videos, self-help groups, workshops, lectures, conferences- are examples of a range of resources to meet a diversity of need. The encouragement of self-help groups extends the confidence and competence of members and provides an important network for increased knowledge and support. The LINC (liaison of those involved in needs of children) formed by parents and professionals, in the opportunity group study, provides an example of the positive nature of such a structure. They have taken responsibility for organising training sessions and conferences together with statutory services so easing the working loads. The chance to develop relationships with local experts in more informal contexts has led to a profitable sharing of knowledge and skills.

Underlying any developments has to be a positive view. Unfortunately, many



models of professional practice focus on weaknesses and problems as opposed to strengths. They lead us to think of remedial action which can have a self defeating implication. It is important to understand there are many ways of explaining events suggesting alternative practices which can be explored. Such inquiry allows movement and change. Everyone can be involved in a scientific search testing out notions for their utility and evaluating outcomes for a better understanding. If ideas for change can be partnership decisions there will be commitment to find positive courses of action.

Therefore, an exploration of participant attitudes, through the parent questionnaire and case study, allows matters to emerge which can be considered and evaluated for useful and appropriate changes. The case study summarises issues for children, parents, professionals and policy makers arising from the factual recording of data. It is a useful way of studying their inter-relation and influence over time and a powerful means of encapsulating the truth. Telling a real story brings topics alive and is a mode that can be understood universally. The attitude study is a quantitative approach that allows assessment of the weight of feeling within a group. Legitimising the client view is vital to considering any possible action. Many of the parent attitudes were extremely negative, which unless acknowledged, would be quite destructive for child management.

### ISSUE 3: THE COMMUNICATION STYLES OF ORACY-LITERACY & THEIR IMPLICATIONS FOR INSTRUCTIONAL SITUATIONS (THE INDIVIDUAL/INTERACTION/INTEGRATION DEBATE)

The LD children in this research were not viewed as problems until experiencing failure to read (chapter 2). Therefore, a major issue to consider was the oracy to literacy shift and its implication for school instruction. Concerns of

teacher and speech therapist are combined because of the parity given to oracy/literacy in the new national curriculum attainment targets. Therefore, it is necessary to adopt an interdisciplinary approach for LD children if they are going to achieve assessment goals. Newton(1989) quotes 30% of children with some language disturbance so possibly we are considering a large group of children who are at learning risk in schools.

An interactive management approach appears to offer some solution to the complex issues involved in language for learning by tackling them in the situation they occur. Therefore, the first problem was to define this context. Five different communicative conditions were selected in which to compare an LD child's performance. When conversing with similar peers (pair/small group) LD children showed normal communication behaviour- initiating and maintaining topics and using language for thinking and planning. This suggests they do not lack skills but in certain situations the behaviour of others does not allow them to use them. It implies that children must be in contexts that facilitate communication if they are to learn. The interactive approach illustrates a collaborative framework where teacher and therapist combine knowledge and expertise to address learning styles, input strategies, instructional language, class discourse levels, peer interactions and learning materials as the important contextual elements in learning.

For the two boys studied this approach proved successful. Even though both were introvert characters and one had distressing social problems (wetting and soiling) they were able to function alongside peers and maintain improvements. Initial testing had showed difficulties in language clarity, design and function but the interactive method did not undertake selective "treatment" concentrating instead on facilitating language use. There was no formal intervention in the conventional sense, correcting phonology and syntax through developmental programmes. However, these linguistic components progressed spontaneously within the general context management approach. Both children did receive a listening programme as this aspect was not dealt with satisfactorily within class but was an appropriate experience for building language awareness.

The interactive method concentrates on "outside" as well as "inside the child" influences on language development. The model accounts for individual differences in its arrangements of the instructional context. For example, an audit of information processing capacities is made and input and materials chosen to allow for problems such as haptic/auditory/visual perception or memory. Also, the interactive mode places special emphasis on input of other learning elements (eg: learning styles, discourse, peer interaction, class materials). Although these "outside the child" influences may be acknowledged by practitioners there is rarely a systematic plan to deal with them in context because teachers and therapists lack opportunities to plan the class curriculum together.

A traditional individual style of management, using the Derbyshire Language Programme, was then compared with the interactive approach. The two children chosen were more outgoing than the previous couple and easier to facilitate. Although they made progress it was slower than for cases A/B and improvements were not maintained when support help ceased. As a result, the boys were quickly transferred to a special school. An important factor may have been an unconscious

school wish for them to be removed because they did not fit the learning system. This is speculation but points to participant attitudes being of crucial concern in determining the success of child management.

Here again, the fragile relationships between individuals are evident which raises many issues if real changes are to be made (eg: school 2 -using traditional methods).

#### 1. Professional/Personal Philosophies

Over the past decade there has been a move to integrate children with special needs into mainstream provision acknowledging a fundamental right for them to be educated alongside their peers. However, Will Swann's data, from the Department of Education and Science (DES), shows little progress actually occurring in England and Wales between 1982-1987 with only a 4% drop in segregation overall (CSIE, 1989). In his report he reveals that 11 authorities have increased levels of segregation. Resistance to ending separation in education is strong, due to deeply entrenched beliefs of society towards disability as well as a lack of resources that could achieve its reality. Moreover, attitudes may have some factual support. For example, in the study of communicative contexts (chapter 9) it was established that both cases A and B responded normally when paired/grouped with others of similar ability in contrast to their behaviour with dissimilar peers who tended to dominate them in conversation. Therefore, it is possible to understand why segregation has support. When resources are scarce and schools have to operate with large class numbers teaching is easier to arrange for like individuals. Mixed ability groups are a positive experience, providing greater intellectual stimulus for the less able and opportunities for all to increase understanding of others, but are only workable with small

numbers.

Nevertheless, the 1981, 1988 Education Acts herald changes and challenge specialists to re-evaluate themselves personally and professionally to meet the new demands placed on them. With regard to language learning needs there is a fundamental problem to successful teacher-therapist co-operation. Therapists are trained in health models and although acknowledging educative practices do not adopt them in professional preparation. For example, child clinical practice is examined in individual rather than interactive formats. Therapists do not have to demonstrate professional skills in educative models in order to gain qualification. This is an important issue as Bulcitt & Turner's (1988) study of speech therapists in schools clearly demonstrates. Even if they have the will to work with teachers in classrooms, therapists do not have the group management skills and curriculum knowledge to make this a practical reality. St. Helen's LEA have negotiated this problem by advertising for qualified graduate speech therapists and putting them through a Post Graduate Certificate in Education before employing them as Educational Logopaedists. As yet such a professional group has no national group status.

A solution would be for the College of Speech Therapists to allow the growth of separate specialities. For example, there could be educational logopaedists in schools and clinical logopaedists in health services. After graduate training in the core discipline an appropriate practical training in education or medicine would be established. Such professional divisions exist abroad but the desire to keep the generic model is still strong in Britain because division is seen to herald professional fragmentation. However, the needs of society demand professional re-appraisal so one hopes that restyled training will occur. David & Smith (1987) and Sage (1989) describe pilot studies of combined



teacher/therapist training exercises but point out that radical shifts are needed in professional philosophies to accommodate the changes necessary to achieve specialists with skills to work together effectively. In a study to assess teachers' knowledge of language disorder Swinson(1990) reviews work in the area noting their difficulties in identifying problems other than speech defect. Clanson et al(1975) suggest that 85% of teachers fail to identify a stutter which is one of the most noticeable transmission difficulties. The studies show that teachers view children with communication problems as less able than their peers. This notion has enormous implications for academic expectations of LD pupils.

Therefore, professional attitudes must change to accommodate client needs and these imply a radical alteration of professional training and service delivery.

## 2. The Status of Spoken English

Related to the above, but certainly a topic in its own right, is the poor status spoken language receives on national agendas. Even though the new national curriculum puts oracy on a par with literacy, Mr. Baker(Education Minister at the time of the Reform Bill,1988) stated publicly that literacy skills were to have pre-eminence in education. It is significant that even the Bullock Report(1975) puts talk second to writing: "language competency grows increasingly through an interaction of writing, talk, reading and experience...". In schools there is a need to have evidence of work achieved to present to parents, inspectors, advisors, governors etc. and this is expected to be in written form. Oral work is more difficult to teach, present and assess especially where large numbers are involved. Frater(1988) states how oral skills have been undervalued in schools with a sharp decline in activity and response (no record)

once examination courses have begun. Even though oral work is now a compulsory element in the new GCSE it represents a small percentage of total marks and a limited teaching time (Fooks, 1989).

However, talking like reading is not a natural process and has to be taught by parents, friends and school. We not only learn how to communicate, but we also use communication to learn how to communicate! It is the most important process of our everyday lives but also the most taken for granted with the least attention paid to its development. Money has been poured out in state aid to illiterates (eg: adult literacy schemes) but there are few official words about the nation's "iliterates"! Of course, such a group has some difficulty in making voices heard but even those who shout for them find limited interest and feeble response. However, all problems in the world (personal/professional/political) root back to ineffective communication so if there is a wish to solve them spoken language skills must be at the top of national agendas. If a fraction of the resources allocated to learning difficulties was spent on the study of human communication there would be a better chance of gaining the knowledge and understanding needed to develop efficient education systems.

### 3. A "Greying Britain"

Another factor of some consequence is the demographic shift bringing with it a focus on aging rather than developing processes. The Development Council reminds us that in 1990 25% of the adult population are retired and over-50s account for 41% of the electorate. By 2000, one third of Britain will be over 50 (19m people) and will control the balance of electoral power and a large slice of government spending. Thus, we can anticipate the needs of young children slipping further down national agendas. Those who have their interests at heart must be assertive and articulate spelling out the consequences for national prosperity if

resources are not available to tackle learning problems. Willem van der Eyken(1982) from a study of European 3-8 year olds in the eighties, puts Britain last of six neighbouring countries in our early education provisions, affirming the need to be strongly assertive for this group. The general shift of population interest has been noticeable in speech therapy. Since 1974 the profession has been entirely administered by the Health Service and rationalisation of activities has led to previous links with schools being severed or reduced. For example, as an employee in the school welfare services before 1974, I spent 9/10 sessions per week in schools whereas after this date all activities were clinic based allowing only occasional visits outside. In line with this, professional emphasis has shifted to medical matters. A scan of the Disorders of Communication Journals(1980-86) shows only 33/91 papers involved in child communication. The other 58 topics concentrate on adult problems due to accident or ageing. This is surprising when you consider that 70% of referrals were in the child population when I left a speech therapy service in 1982. Changes of emphasis have to be acknowledged as constraints when attempting to pursue the matters of LD children.

#### 4. The World of Change

The last hundred years have seen increasing urbanisation of societies taking them away from the concerns of the natural world. It has been a period of swift social change leaving us with little time for reflection. Shifts of power from an aristocracy to a meritocracy have encouraged personal success and strong pursuit of a market economy. This poses a dilemma for populations who are prevented from achieving through accident of birth or development and end up having little choice over the direction of their lives. A policy of equal human rights means children with communication problems must be given the chances to

HAV study details their information processing and takes an audit of each channel as the baseline for deciding input. Sperry's (1987) research on listening reports a 25% success rate in face to face contact. Only 1 in 4 people will process adequately the message presented to them! If these are statistics for normal communicators we can expect LD children to perform even less adequately. Evidence from the HAV study reminds us of the importance of knowing how to adjust input. If information processing is not considered first there is no chance of providing the right communication opportunities that will allow children to control their language for learning.

## 2. Carers

Parents have strong emotional feelings and reactions towards their child's communication difficulties which makes them particularly sensitive in conversational exchanges. They are likely to be impatient and demanding of the controllers (professionals/policy makers) and communication conflict is a strong possibility when one of the partners is emotionally overcharged and feeling embarrassed, guilty and inadequate. Parents need to understand the importance of open exchange and being honest about feelings and fears before real communication and consultation can take place.

## 3. Controllers (Professionals)

The traditional role of expert has encouraged their domination in conversation exchanges. Usually, the first task of the speech therapist is to take a case history in which a barrage of questions is swiftly fired in the parents' direction. Given their emotional fragility this can be a pressurising experience. However, most experts will experience difficulty in believing that

develop their worth and control their destinies.

### FINAL REFLECTIONS

Probably, the last two decades have seen more changes in the education of children with learning difficulties than any other part of the school system. Much of this has been prompted by extensive psychological and educational research but although this is well documented there is relatively little written on current application. This project has attempted to link theoretical constructs to working arrangements. The target was to produce evidence from real situations that would help reflection on current styles of practice.

Management of LD children can be viewed as a game with clients(LD children) and Carers(parents) ranged against Controllers(Professionals) (Administrators).

The match has often proved a mis-match with forceful "controllers" dominating events. However, the educational revolutions of the 1980s have succeeded in making consumers more powerful "players" moving towards an equal partnership in child management. These "new" relationships depend heavily on the quality of ongoing communication and much of the evidence of this research points to a need for massive improvements in this process. The requirements for each of the participants are as follows:

#### 1. Clients

These are the group with problems in the communication process. The evidence of this research points to an emphasis in assessment and management on their transmission difficulties. However, if they are going to be able to use language for learning their abilities as receivers of information must be observed. The



questions can be destructive having been taught that they are a good way to learn! Professionals' expertise leads to strong opinions encouraging them to be critical of wrong practices regarding children. Although they may feel it constructive to voice these to parents such notions will always be received negatively. The approach "What do we need to do differently" puts a positive line into operation and prevents negative feelings. It is noticeable that people with little formal education are often better observers and listeners than intellectuals, partly because they have developed their non-verbal skills. This is an important factor in being "streetwise", that is sharp and perceptive as to what is happening around about. Professionals, working with clients, need this skill in order to communicate effectively-always remembering that a parent's pained expression could be indignation rather than a negative response to what is said! Mehrabian(1987) reminds us that words create less than 10% of message impact compared with 40% from tone of voice and 50% from body language. This comes as a shock to those of us conditioned to the skilful use of words. It is easy to mismatch messages between channels. Our tone of voice and body language should reinforce what is said. These are vital points when trying to establish clear communication with clients who have their own lines emotionally charged and liable to interference. The professional's aim is to put messages over clearly and some do this believing ideas have to be "sold". However, to be successfully accepted, they must be "marketed", that is adapted and modified to suit the views of the consumer. The attitude study(chapter 6) demonstrates the importance of this. The greatest danger is for professionals to assume that communication has taken place with clients who may be miles off their own particular wave length. What is received is not necessarily what we think we have transmitted. Perhaps we need to invoke Robbie Burns' prayer: "Would that God the giffie gie us to see ourselves as others see us"!

#### 4. The Controllers (Administrators)

Unfortunately, those most senior and powerful are the least likely to expose themselves to new learning and skills. However, these are urgently demanded in setting up communication structures with consumers to understand their needs more fully. Frequently, parent lobby groups are ignored and distrusted by government bodies who are likely to regard them as trouble making. Politicians and their administrators have to balance a huge number of concerns and it is less harassing for them to distance themselves from consumer issues. More honest and open exchanges would produce a better understanding of each other and lead to higher levels of cooperation rather than confrontation.

At the heart of any collaborative issue are the attitudes, beliefs and feelings of those involved. Management is a communication process and when it involves participants with problems it produces a situation of enormous complexity. Communication is a reciprocal activity and therefore needs an interactive approach when trying to solve its many difficulties. These complex, dynamic and adaptive phenomena cannot be illuminated by traditional scientific methods as they demand the control of variables which would not allow for context and creativity. Observations of children in school (chapter 7) show they were not consistent in behaviour across contexts suggesting the environment as an important variable in achieving success. It is for this reason that qualitative methods using personal observation and description have played an important part in discovering the salient issues in management of language difficulty. Measurement and quantification were important in testing out observations such as differences in channel processing, participant attitudes and management strategies.

Practitioners have always been sceptical of much scientific study feeling their

restricted perspectives answer questions of more interest to researchers than users and resulting in real problems not being considered. Research that generates from the views of the users as a basis for formulating problems from the perspectives of participants gives them a stake in the outcome generating its own dynamic force to initiate reforms. Therefore, academic rigour is balanced with practical relevance. This research has had a positive influence for change within the context of its operation encouraging parents and professionals to cooperate more openly. There has been a move towards developing a total environment and atmosphere for children rather than continuing with elegant, successive, selective approaches to learning. This has helped produce higher levels of motivation. Interest is focused on the process of change rather than emphasising the product of research.

"Just as toothpaste and mouthwash are really not the key to social success, nobody can give a communication pill which automatically transforms someone into a communication star" (Myers & Myers, 1980). No one can pretend this research is a magic formula for turning LD children into silver-tongued orators and best-selling writers. At the very least it has told a story and started a conversation and who knows where it might lead .....

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